

JPRS 70383

28 December 1977

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES  
No. 84

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<b>BIBLIOGRAPHIC DATA SHEET</b>	1. Report No. JPRS 70383	2.	3. Recipient's Accession No.
4. Title and Subtitle USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS - BIOMEDICAL AND BEHAVIORAL SCIENCES, No. 84			5. Report Date 28 December 1977
7. Author(s)			6.
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			8. Performing Organization Rept. No.
			10. Project/Task/Work Unit No.
12. Sponsoring Organization Name and Address			11. Contract/Grant No.
			13. Type of Report & Period Covered
			14.
15. Supplementary Notes			
16. Abstracts  The report contains abstracts and news items on aerospace medicine, agrotechnology, bionics and bioacoustics, biochemistry, biophysics, environmental and ecological problems, food technology, microbiology, epidemiology and immunology, marine biology, military medicine, physiology, public health, toxicology, radiobiology, veterinary medicine, behavioral science, human engineering, psychology, psychiatry and related fields.			
17. Key Words and Document Analysis. 17a. Descriptors <div style="display: flex; justify-content: space-between;"> <div> USSR Aerospace Medicine Agrotechnology Biology Botany Epidemiology/Immunology Human Engineering Marine Biology </div> <div> Medicine Microbiology Physiology Psychology/Psychiatry Public Health Radiobiology Toxicology Veterinary Medicine </div> </div>			
17b. Identifiers/Open-Ended Terms			
17c. COSATI Field/Group 2, 5E, 5J, 6, 8A			
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22151		19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 74
		20. Security Class (This Page) UNCLASSIFIED	22. Price A04

28 December 1977

## USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 84

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL SCIENCES  
Aerospace Medicine

USSR

UDC 612.886

PARTICIPATION OF VERTICAL SEMICIRCULAR CANALS IN THE VESTIBULO-OCULOMOTOR  
RESPONSE TO THE HORIZONTAL ROTATION TEST

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IM. I. M. SECHENOVA in Russian No 8,  
1977 pp 1102-1109 manuscript received 6 Jan 77

LEVASHOV, M. M. and STOLBKOV, YU. K., Experimental Physiology Laboratory,  
Leningrad Scientific Research Institute of Otolaryngology, and the  
Vestibular Apparatus Physiological Laboratory, Institute of Physiology imeni  
I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] Electronystagmographic studies were conducted on 2.5-3.0 kg rabbits to elucidate the mechanism responsible for rotational nystagmus (RN) in the sagittal plane following angular acceleration in the horizontal plane. The results showed that sagittal RN was a component of a complex triplanar response to rotation in the horizontal plane which was directed clockwise in the right eye during acceleration to the left, and counterclockwise during deceleration. Further, the frequency of sagittal RN could be at variance with horizontal RN. The mechanism underlying these findings is apparently based on the fact that the angular acceleration in the horizontal canals elicits cupulo-endolymphatic shifts in the anterior and posterior vertical canals as well. It appears, furthermore, that displacements in the horizontal and anterior canals are unidirectional, whereas that occurring in the posterior canal is in the opposite direction, e.g., ultriculofugal shifts in the horizontal and anterior canals, and ultriculopetal shift in the posterior canal. Figures 3; references 13: 10 Russian, 3 Western.

USSR

UDC 629.78:612.83.015.348

EFFECTS OF SPACE FLIGHT ON SOLUBLE PROTEINS IN THE SPINAL CORD AND SPINAL  
GANGLIA OF THE RAT

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8,  
1977 pp 168-171 manuscript received 13 Dec 76

GORBUNOVA, A. V. and PORTUGALOV, V. V., Corresponding Member, Academy of  
Medical Sciences USSR, Moscow

[Abstract] Spinal cords and ganglia from rats subjected to a 19.5 day space flight aboard Kosmos-782 were subjected to sequential extraction with distilled water, 0.85% NaCl, and 0.1N NaOH 10-12 hr and 25 days after the flight. Studies at the level of lumbar enlargement revealed a decrease in the water-soluble proteins 10 hr after the flight in the spinal cord grey matter (30  $\mu$ g/mg vs. 37  $\mu$ g/mg control value) white matter (20  $\mu$ g/mg vs. 28  $\mu$ g/mg control value), and the spinal ganglia (37  $\mu$ g/mg vs. 43  $\mu$ g/mg

control value); saline or alkali extractable proteins did not undergo significant changes. After 25 days the water-soluble proteins met or exceeded the control values of the spinal cord grey matter, white matter and the spinal ganglia at 43, 27.5, and 47  $\mu$ g/mg, respectively. In addition, a significant increase in NaOH-soluble proteins was seen at this time. These findings demonstrate that space flight has a profound effect on the metabolic state of the afferent and efferent limbs of the spinal reflex arc. References 6: 3 Russian, 3 Western.

USSR/BULGARIA

UDC 576.851.132.097.22:615.332/.095.57

TRANSFER BY CONJUGATION OF PLASMID RESISTANCE TO GENTAMYCIN AND OTHER ANTIBIOTICS IN CLINICAL STRAINS OF PSEUDOMONAS AERUGINOSA

Moscow ANTIBIOTIKI in Russian No 8, 1977 pp 699-703 manuscript received 24 Feb 77

MOROZ, A. F., TYAGUNENKO, YU. V. and KIROVA, N. Z., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow, and Center for Contagious and Parasitic Diseases, Sofiya Medical Academy, Bulgaria

[Abstract] The markers of plasmid resistance to gentamycin, neomycin, tetracycline and other antibiotics were successfully transferred by conjugation from 10 clinical strains of *Pseudomonas aeruginosa* isolated from burn patients to the recipient *P. aeruginosa* PTO 629 Rf<sup>r</sup> strain. The markers were transferred to a substantial number of exconjugants, e.g., the marker of streptomycin resistance - 76 (88.4%) of 86, that of tetracycline resistance - 150 (90.9%) of 174, and that of gentamycin resistance - 100 (86.2%) of 110 exconjugants. This marker was transferred from the *P. aeruginosa* strains in different combinations with other markers of antibiotic resistance, e.g., neomycin, gentamycin, and tetracycline. On the other hand, the markers of resistance to streptomycin, carbenicillin, neomycin, and combinations of streptomycin and neomycin and neomycin, streptomycin, and chloramphenicol were not transferred. References 11: 1 Russian, 10 Western (one by Tyagunenko)

USSR

UDC 615.332 (Oxycarminomycinum)

SYNTHESIS OF 14-OXYCARMINOMYCIN AND STUDY OF ITS ANTINEOPLASTIC ACTIVITY

Moscow ANTIBIOTIKI in Russian No 8, 1977 pp 693-695 manuscript received 30 Mar 77

PAVAROV, L. S., BAZHANOV, V. S. and VASEKINA, V. F., Institute for Finding Antibiotics, Academy of Medical Sciences USSR, Moscow

[Abstract] The new semisynthetic antibiotic of the anthracycline series 14-oxycarminomycin, obtained by alkaline hydrolysis of 14-bromocarminomycin, was tested on L10-1 mice with a solid lymphosarcoma. The animals were injected intravenously twice, the first time 24 hours after the tumor was implanted and then 120 hours later. 14-Oxycarminomycin was found to have the same highly selective antineoplastic activity and toxicity as carminomycin. It suppressed tumor growth by 90% in doses that did not exceed the maximum tolerable (LD<sub>10</sub>). Figure 1; references 9: 6 Russian, 3 Western.

USSR

UDC 615.331 (Polymyxinum).012.6

EFFECT OF DIFFERENT SALTS AND THEIR CONCENTRATION ON THE BIOSYNTHESIS  
OF POLYMYXIN M BY BAC. POLYMYXA ROSS.

Moscow ANTIBIOTIKI in Russian No 8, 1977 pp 683-689 manuscript received  
22 Feb 77

PAVLYUK, YU. V., BOGATSKIY, M. A. and ANAKHOVA, V. A., Kiev Medicinal  
Preparations Plant

[Abstract] A study was made of the effect of change in concentration of 5 different salts on antibiotic formation by the soil spore-forming micro-organism *Bacillus polymyxa* Ross in a medium containing wheat flour as the source of organic nitrogen. An increase in the concentration of ammonium sulfate from 0.5 to 2% increased the accumulation of polymyxin M proportionately, but a further increase in the salt decreased it. Sodium chloride, potassium chloride, and potassium sulfate at concentrations of 1 to 2% affected the synthesis of polymyxin M in the same way as ammonium sulfate; the level of activity exceeded the control by 10% on the average. However, sodium sulfate at the same concentration had virtually no effect on antibiotic formation. Figures 5; references 16: 9 Russian, 7 Western.

USSR

UDC 576.851.42.095.18:615.33

SENSITIVITY OF BRUCELLA OVIS TO ANTIBIOTICS

Moscow ANTIBIOTIKI in Russian No 8, 1977 pp 716-718 manuscript received  
2 Mar 77

PINIGIN, A. F., PETUKHOVA, O. S., KALINOVSKIY, A. I., REPINA, L. P.  
and LAUKNER, I. V., Irkutsk Plague Institute of Siberia and the Far East,  
Ministry of Health USSR

[Abstract] The sensitivity of 31 R strains of *Brucella ovis* and the genetically related S cultures to 8 antibiotics was studied by the method of serial dilutions in Marten's agar containing native horse serum. All the strains proved to be highly sensitive to tetracycline and streptomycin. Monomycin, benzyl penicillin, morphocycline, and kanamycin exhibited moderate bacteriostatic activity. The *B. ovis* strains were comparatively insensitive to lincomycin and polymyxin M. The S subcultures were more resistant to all the antibiotics tested than the related R strains. References 9: 6 Russian, 3 Western.



## PSORALEA DRUPACEA BUNGE AS A PROMISING SOURCE OF THE ANTIBIOTIC BAKUCHIOL

Leningrad RASTITEL'NIYE RESURSY in Russian No 3, 1977 pp 460-463

BONDARENKO, A. S., AYZENMAN, B. YE., ZATYLA, D. G., BAKUNINA, L. A., KOZHINA, I. S., PRIKHOD'KO, V. A., SILKINA, O. V., and MESHCHERYAKOV, A. A., Institute of Microbiology and Virology imeni D. K. Zabolotniy, Academy of Sciences UkSSR, Kiev, Botanical Institute imeni V. L. Komarov, Academy of Sciences USSR, Leningrad and Institute of Botany, Academy of Sciences, Turkmen SSR, Ashkhabad

[Abstract] Chloroform and acetone extracts from the foliage of the wild forage plant *Psoralea drupacea* Bunge (family Fabaceae) obtained at the start of the flowering period contain about 65% bakuchiol. The yield of the extracts varies from 10 to 12% of the weight of the air-dried plant. Bakuchiol possess high and selective antimicrobial activity. It suppresses the growth of gram-negative bacteria and dermatophytes at concentrations of 1 to 5 and 2 to 20  $\gamma$ /ml, respectively, but is inactive against gram-negative bacteria (with a few exceptions) and several saprophytic and pathogenic fungi. Staphylococcal strains resistant to penicillin, streptomycin, tetracycline, and some other antibiotics are sensitive to bakuchiol at concentrations of 1.4 to 5  $\gamma$ /ml. Figure 1; references: 6 Russian

USSR

SECOND ALL-UNION CONFERENCE ON METABOLISM AND FUNCTIONS OF VITAMIN A AND CAROTENE IN THE BODY OF HUMANS AND ANIMALS, AND THEIR PRACTICAL UTILIZATION

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13, No 3,  
May/Jun 77 pp 485-486

NAUMCHUK, P. L. and GRINCHAK, S. I.

[Abstract] The Second All-Union Conference on Metabolism and Functions of Vitamin A and Carotene in the Body of Man and Animals and Their Practical Utilization was held 15-18 September at the Chernovtsy "Order of the Red Banner of Labor" State University. Represented at the conference were institutions of the academies of sciences of the Soviet Union, the Ukraine, Belorussia, Kazakhstan, Latvia, Kirgizia and Azerbaydzhan. There were two plenary sessions where papers were delivered on the most urgent problems of metabolism and functions of vitamin A and carotene. Two sections were simultaneously active: I--"The Properties and Biological Functions of Vitamin A" and II--"Vitamin A and Carotene in Animal Husbandry." Most of the papers dealt with research on the molecular and submolecular levels. Among the reports given were those by A. R. Valdman (Riga) on assimilation of carotene and vitamin A by agricultural animals, A. A. Dmitrovskiy (Moscow) on current concepts regarding the metabolism of carotene and vitamin A, Z. K. Leutskaya (Moscow) on the part played by vitamin A in immunogenesis, M. M. Baran and A. F. Batsura (Chernovtsy) on the protective role of vitamin A in processes of biosynthesis of protein in the mucous membrane of the small intestine during exposure to ionizing radiation, Ye. N. Lyubovich and S. I. Grinchak (Chernovtsy) on disruption of metabolism in the glycine-succinate cycle under conditions of vitamin A deficiency, V. M. Glebov and L. T. Oplachko on the effect that different doses of vitamin A have on oxidative processes in tissues, P. L. Naumchuk, Ye. N. Lyubovich and A. D. Butkovskaya (Chernovtsy) on disruption of the fraction ratio of soluble proteins and lipids in the skin of rats in the case of vitamin A deficiency, A. A. Dusheyko and M. A. Blazhevich (Kiev) concerning the change in composition of mucous gland secretions under conditions of vitamin A deficiency, V. N. Karnaukhov (Moscow) on the functions of carotinoids in animal cells, F. Z. Gurfinkel' (Chernovtsy) on copper metabolism in the animal body for different doses of protein and vitamin A deficiency, V. K. Bauman and N. I. Berzin' (Riga) on the balance and uptake of zinc in chickens as a function of vitamin A sufficiency, Ye. A. Petukhova and N. T. Yemelina (Moscow) on assimilation of carotene by dairy cattle as a function of the carbohydrate-protein balance of feed rations, M. S. Zhedek on the stabilization of tocopherols and xanthophylls in alfalfa meal, and P. P. Anderson, Ya. Ya. Spruzh and R. M. Yanshevskiy (Riga) on the economic effectiveness of production and use of stabilized grain meal.

USSR

UDC 617-001.17-092.2-07:616.61-008.931:577.152.11

# CHANGES IN HEPATIC GLYCOLYSIS OF THE RAT INDUCED BY EXPERIMENTAL BURNS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8, 1977 pp 171-173 manuscript received 9 Jul 77

SLOBODIN, V. B., LIFSHITS, R. I. and SOBOLEVSKAYA, T. M., Department of Biochemistry, Ivanovo Medical Institute, and the Department of Biochemistry, Chelyabinsk Medical Institute

[Abstract] Liver homogenates were prepared from 180-200 gm outbred albino rats to study the effects of 3rd degree experimental burns on glyceraldehyde-3-phosphate dehydrogenase (GPH) activity and 3-phosphoglycerate (3-PG) formation. Both parameters were depressed vis-a-vis control data on the 3rd, 6th, 12th and 24th post-burn day; lowest GPH activity (51% of control) and 3-PG formation ( $17.7 \mu\text{moles/gm/30 min}$  vs.  $28.1 \mu\text{moles/gm/30 min}$  control) were detected on the 6th day. Further, addition of NAD alone or of NAD+ ADP to the incubate promoted 3-PG recovery to control levels, while ADP alone was ineffective. The findings were interpreted to indicate that cellular shortage of NAD served as the limiting factor in hepatic glycolysis in burns and that this may be the mechanism responsible for the ineffectiveness of glucose as an energy source in such situations. Tables 2; references 12: 6 Russian, 6 Western.

USSR

UDC 577.112

# SOLUBILIZATION OF BRAIN PROTEINS BY DETERGENTS DURING HYPEROXIDATION

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1977 pp 38-41 manuscript received 25 Jun 76

DREVAL', V. I., Biochemistry Department, Rostov State University

[Abstract] In a study of the action of hyperoxidation on water-insoluble rat brain proteins, an increase of solubilization of the proteins after the action of hyperoxidation is shown by means of detergents. The relationship of solubilization to the concentration of the detergent is studied. The difference in the action of anionogenic detergents (sodium desoxycholate and sodium dodecylsulfate) and the nonionogenic detergent (triton X-100) is shown. The greatest amount of brain protein is solubilized through the action of sodium dodecylsulfate. Brain protein solubilization by sodium desoxycholate does not yield reliable differences under normal conditions and during hyperoxydation. Protein solubilization is most significantly increased through the action of triton X-100. Figures 2; references 9: 2 Russian, 2 Ukrainian, 5 Western.

USSR

UDC 547.9+577.15

INVESTIGATION OF A PROTEOLYTIC COMPLEX OF ACTINOMYCES 771 ENZYMES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 13, No 3, May/Jun 77 pp 391-397 manuscript received 10 Oct 76

KREST'YANOVA, I. N., RASSULIN, YU. A., MESHKOV, A.N. and LEVITOV, M. M., All-Union Scientific Research Institute of Antibiotics, Moscow, Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR, Moscow

[Abstract] The paper gives the results of an investigation of the properties of purified proteases and peptidases extracted from Actinomyces 771 with  $(\text{NH}_4)_2\text{SO}_4$ . The average molecular weight of the extracted enzymes is 27,000. The action of inhibitors in an acid buffer was determined by adding solutions of parachloromercuribenzoate (PCMB) or EDTA, and also diisopropyl fluorophosphate (DEP). The influence of pH on the proteolytic activity of the enzymes was studied by adding an aliquot sample in acid buffer containing  $\text{Ca}^{2+}$  acetate to a casein solution in the same buffer. The temperature optimum and thermal stability were also studied, as well as the influence of various metal ions on proteolytic activity. It was found that the Actinomyces enzymes have caseinolytic, trypsin, chymotrypsin, elastolytic, leucinaminopeptidase, carboxypeptidase and amidase activity, and also pronounced fibrinolytic and thrombolytic action. Optimum hydrolysis of casein was observed at 60°C, pH of 8-8.5 in the presence of  $\text{Ca}^{2+}$  ions in a concentration of at least  $10^{-3}$  M.  $\text{Cu}^{2+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Mn}^{2+}$  and  $\text{Mg}^{2+}$  ions in concentrations of  $5 \cdot 10^{-3}$  M had an inhibiting effect. It is shown that the new proteolytic complex is similar in many of its properties to pronase and protelin type enzymes. Figures 5; references 24: 14 Russian, 10 Western.

USSR

UDC 576.658.75

STUDY OF THE STRUCTURE OF MYXOVIRUSES BY THE ELECTRON SPIN RESONANCE METHOD. I. THERMOSTABILITY OF THE LIPID MEMBRANE OF INFLUENZA AND SENDAI VIRUSES

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian No 2, 1977 pp 432-439 manuscript received 13 Jul 76

KHARITONENKOV, I. G., KHRISTOVA, M. L., and RUUGE, E. K., Institute of Virology im. D. I. Ivanovskiy, Academy of Medical Sciences USSR, and Moscow State University im. M. V. Lomonosov

[Abstract] The behavior of the spin probes  $\text{C}_5$  and  $\text{C}_{16}$ , iminoxyl derivatives of stearic acid, and the temperature dependence of their mobility were studied in the lipid membranes of two myxoviruses - Sendai virus

(paramyxovirus) and influenza virus (orthomyxovirus). The spectra of both probes were found to coincide at room temperature, an indication of the similar composition and origin of the viral lipid membranes. Like influenza virus, Sendai virus has a double external lipid membrane. The structure of the surface layer of the lipids (about 8 Å) is determined by the surface glycoproteins incorporated into the lipid membrane. The glycoproteins probably do not lie deep in the myxovirus membrane or have any effect on the structure of its inner surface. The structural transition of the lipid phase 8 Å from the surface of the viral particle occurs at 50°. Figures 4; references 29: 4 Russian, 25 Western.

USSR

UDC 577.154.3

NUCLEOTIDE COMPOSITION AND DIGESTION BY NUCLEASES OF RNA FROM MUSCLE  
AMYLOSE ISOMERASE

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian No 2, 1977 pp 374-379 manuscript received 27 Apr 76

KORNEYEVA, G. A., VENKSTERN, T. V. and PETROVA, A. N., Institute of Biochemistry imeni A. N. Bakh and Institute of Molecular Biology, Academy of Sciences USSR, Moscow

[Abstract] Study of the RNA from the branching enzyme of muscles showed that it contains 31 or 32 nucleotides of which 9 or 10 are minor, or more than the number of minor components even in tRNA. Another peculiarity of amylose isomerase is the presence of a large quantity of guanine and its methylated derivatives, which constitute approximately 40% of all the nucleotides. The terminal mers, adenosine and pGp, were found in both alkaline and T<sub>2</sub>-RNAse hydrolysates. Amylose isomerase RNA can be split by snake venom phosphodiesterase and by pancreatic and T<sub>2</sub> RNases. It therefore has all the 3',5'-phosphodiester bonds common to all the known RNAs. Figures 3; references 15: 7 Russian, 8 Western.

USSR

UDC 581.132.1

LIGHT-INDUCED RELEASE OF HYDROGEN BY CHLOROPLASTS OF DIFFERENT PLANTS

Moscow FIZIOLOGIYA RASTENIY in Russian No 4, 1977 pp 699-703 manuscript received 9 Aug 76

PERSANOV, V. M., GOGOTOV, I. N., GINS, V. K. and MUKHIN, YE. N., Institute of Photosynthesis, Academy of Sciences USSR, Pushchino-on-Oka

[Abstract] Hydrogen was released by corn, pea, spinach, and tobacco chloroplasts in the presence of hydrogenase (from the phototrophic bacteria

*Thiocapsa roseopersicina*), ferredoxin, catalase, glucose, and glucose oxidase at a constant rate for 3 to 6 hours without a noticeable lag period. Hydrogen was not released in the absence of hydrogenase or in the dark. The quantity decreased perceptibly (tobacco and spinach chloroplasts) or no hydrogen at all was released (pea and corn chloroplasts) in the absence of catalase and an oxygen-absorbing system (glucose and glucose oxidase). The release of hydrogen ceased when the chloroplasts were treated with diuron or heated for 5 minutes to 55°, suggesting that water is the hydrogen donor in these reactions. On the other hand, chloroplasts treated with diuron or heated retained their capacity to release hydrogen when reduced 2,6-dichlorophenolindole phenol was added, showing that hydrogen can be released even when only the first photosystem is functioning. Figures 3; references 16: 5 Russian, 11 Western.

## Biophysics

USSR

### ELECTRIC PROPERTIES OF SOLUTIONS OF HUMAN BLOOD SERUM ALBUMIN IN THE FREQUENCY RANGE OF 1-15 MHz

Moscow BIOFIZIKA in Russian Vol 22, No 3, May/Jun 77 pp 534-535  
manuscript received 6 May 76

SHEVCHENKO, YU. YE., Kursk State Medical Institute

[Abstract] Solutions of human blood serum albumin in concentrations of 2, 4 and 6% in water at 25°C were studied for electric conductivity, and a 2% aqueous solution of albumin was also studied for permittivity before and after thermal denaturation at 1-15 MHz. Denaturation was done at 65°C for 30 minutes. Conductivity was independent of frequency, indicating absence of relaxation processes at 1-15 MHz. Permittivity measurements show that the region of low-frequency dispersion has already been passed before the lower limit of the frequency band is reached (1 MHz). The permittivity of the denatured solution is lower, showing a reduction of the degree of hydration of protein molecules, and corresponding to the frequency range above the frequency of anomalous dispersion. Figures 3, references 5: 4 Russian, 1 Czech.

USSR

### INFLUENCE OF MICROWAVE EXPOSURE ON THE ELECTROPHORETIC MOBILITY OF ERYTHROCYTES

Moscow BIOFIZIKA in Russian Vol 22, No 3, May/Jun 77 pp 493-498 manuscript received 16 Mar 76

ISMAILOV, E. SH., Dagestan Polytechnical Institute, Makhachkala

[Abstract] The author studies the electrophoretic mobility of erythrocytes under the influence of microwaves of varying duration and intensity. A suspension of human erythrocytes in a concentration of about 5 million cells per m<sup>2</sup> in isotonic phosphate buffer with glucose (pH 7.4) was exposed to microwaves in the 1009 MHz band in a coaxial cell at 37°C. Unexposed control specimens were held at the same temperature. After exposure, the suspension was diluted 1000 times and the electrophoretic mobility was measured in a horizontal capillary. Shifts in mobility were observed depending on the intensity and duration of exposure. Two basic processes are distinguished: relaxation vibrations of dipole molecules of water that cause dielectric losses of microwave energy, and vibrations of free charges that cause losses of conductivity. As a result, the microwave energy is converted to heat, raising the temperature of the medium. The situation is considerably complicated by the heterogeneity of the biological medium, in

particular by cross linkages. It is suggested that two superimposed mechanisms may be responsible for the shifts in electrophoretic mobility of erythrocytes: deformation of a double electric layer on the cell surface, and cross linkages in the cell membrane itself, leading to a change in the number of potential-forming ionized groups on the surface. Figures 3; references 14: 11 Russian, 3 Western.

USSR

MECHANISM OF CHANGES IN BLOOD COAGULATION AND FIBRINOLYSIS UNDER THE EFFECT OF DIRECT CURRENT

Moscow BIOFIZIKA in Russian Vol 22, No 3, May/Jun 77 pp 489-492  
manuscript received 12 Feb 76

MISHCHENKO, V. P. and MISHCHENKO, V. I., Poltava Medical Stomatological Institute

[Abstract] Experiments were done on ten dogs of both sexes weighing from 12 to 21 kg to determine the influence of electric shock by direct current on shifts in blood coagulation and fibrinolysis and to study the part played by hemocoagulating tissue compounds in regulation of these processes. The stimulus had a potential of 20 V and was applied for 30 s. Blood was taken before the experiment and 1, 5 and 30 minutes after the shock. The samples were tested for coagulation time, recalcification time, thrombin time, fibrinogen concentration and fibrinolytic activity. It was found that in the first 5 minutes after shock, fibrinolysis is activated, and the coagulation time and plasma recalcification time are reduced. After an elapsed time of about 10 minutes the initial indices tend to be restored. This response is apparently due to release of coagulative substances from various tissues of the body, and also involves an increase in the permeability of vessels, muscles and nerves. References 18: 9 Russian, 4 Polish, 5 Western.



USSR

UDC 576.895.771.097.22:615.285.7):576.895.771.06

INCREASED ACTIVITY OF ATTACKS ON MAN OF DDT-RESISTANT FEMALE ANOPHELES  
MACULIPENNIS SACHAROV FAVRE UNDER THE INFLUENCE OF CONTACT WITH DDT

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
Vol 46, No 4, Jul/Aug 76 pp 439-444 manuscript received 23 Sep 75

ALEKSEYEV, A. N. and SUVOROVA, N. I., Institute of Medical Parasitology  
and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR  
Moscow

[Abstract] The title mosquito transmits malaria in Azerbaydzhan. The present article reports quantitative recording of increase in activity of DDT-resistant females against man as the result of contact with surfaces treated with DDT. The mosquitoes were collected from dwelling and non-dwelling sites in Agdashkiy, Massalinskiy, Kyurdamirskiy, and Sabirabadskiy Rayons of AzerSSR in 1972-1974. When the resistant mosquitoes were placed in contact with a 2% DDT processed surface they survived the contact, and the number of their bloodsuckings increased by a factor of 2-3 as compared with controls. Increased exposition by 16 times (from 30 min to 8 hr) led to insignificantly increased attacks against man. Newly emerged, engorged, parous, and diapausal females reacted similarly in this test. When the mosquitoes had free access to prey in an area treated 24 hrs earlier with 25% DDT emulsion, the females engaged in repeated bloodsucking in 30% of the cases. The blood sucking helps to prevent symptoms of DDT poisoning. Maximum increase in biting activity was seen in empty females in the gonotrophic cycle stage II, those mosquitoes most epidemiologically dangerous of all tested. The data suggest that continued use of DDT against the DDT-resistant mosquito poses an epidemiological danger. Figure 1; table 1; references 11: 3 Russian, 8 Western.

USSR

UDC 615.285.7:615.451.3

REPELLENT NAPKINS FOR PROTECTION AGAINST BLOODSUCKING DIPTERA

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
Vol 46, No 4, Jul/Aug 77 pp 434-439 manuscript received 1 Nov 76

POTAPOV, A. A., TSIZIN, YU. S., KHARITONOVA, S. I., VLADIMIROVA, V.V., and  
SAZONOVA, E. V., Institute of Medical Parasitology and Tropical Medicine  
imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] Protection against bloodsucking insects in the USSR makes use of repellents in the form of lotions, cremes, and aerosols, and to a much less degree, in the form of napkins (English patent No. 1092550, 1967) issued by several non-Soviet companies. The Moscow branch of the All-Union Scientific

Research Institute of Chemical Design developed a DETA repellent napkin in 1974 under the name repidet. The present report describes results of trials of repellent napkins devised by the authors and manufactured by the Moscow firm Voskhod. The impregnated napkins were 135x195 mm in size, packed in sealed packets 60x80 mm. The napkins were made from Finnish moisture proof crepe paper and from long-fiber moisture proof paper of Soviet manufacture, suggested by the Central Sci. Res. Paper Institute. The impregnation process employed the PV-28 machine of the West German firm IWKA and applied 3.3-3.5 g doses on the napkin. Tests were made in the Tyumen area. Repiben (N-benzoyl 30%; dimethylphthalate 69%; terpeneol 1%) applied by napkin on the hand to protect from bites of *Aedes gr. communis* protected for an average of 5 hr 10 min. Repdiphen (N,N-diethylamide phenoxyacetic acid 30%; dimethylphthalate 20%; alcohol 45%; glycerol 5%) protected for an average of 3 hr 52 min. Toxicity tests on laboratory animals and man showed that the drugs are well tolerated in hand application and are not harmful. Tables 3; references: 2 Russian.

USSR

UDC 616.936.2-022.395.771

TRANSMISSION BY ANOPHELES MACULIPENNIS ATROPARVUS OF THE BRAZILIAN STRAIN OF TERTIAN MALARIA

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 63-67 manuscript received 18 Dec 75

BIBIKOVA, V. A., DASHKOVA, N. G., SULEYMANOV, G. D., RASNITSYN, S. P. and TIBURSKAYA, N. A.: Institute of Medical Parasitology and Tropical Medicine imeni Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] The constantly increasing volume of international contacts presents a continuing danger of the transmission of malaria, and presents serious problems in epidemiological inspection. Unfortunately, susceptibility to infective strains of mosquitoes (*Anopheles*) is dealt with only in a few studies by N. A. TIBURSKAYA (1962, 1965), devoted to the Korean and two strains of the three-day malaria. The present study was made with *Anopheles maculipennis atroparvus* von Thiel, 1927, and with *Plasmodium vivax*, the Brazilian carrier of tertian malaria. This subspecies is encountered in various parts of the southern USSR, and in other areas of Europe. Eight groups of *An. m. atroparvus* were infected from four malaria patients. These were kept at a temperature of 23-26°C and humidity of 80-95% for 2 days. Then counts were obtained for the number of gametocytes per 100 leucocytes, the numbers of oocysts and the numbers of sporocysts; also the intensity of infection of the mosquitoes and the dimensions of oocysts as related to the lapse of time following infection. The authors conclude the definite

possibility of the entire developmental cycle in *An. m. atroparvus*, at least under the conditions of the experiment. The same possibility for normal living conditions cannot be excluded. Figure 1; references 16: 10 Russian, 6 Western.

USSR

UDC 614.891:614.449.57

RESULTS OF TESTS ON HOODS OF VARIOUS REPELLENT-TREATED MATERIALS TO DETERMINE THEIR EFFECTIVENESS AS PROTECTION AGAINST MOSQUITOES AND GNATS

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 60-63  
manuscript received 8 Apr 75

VLADIMIROVA, V. V. and POTAPOV, A. A.; Institute of Medical Parasitology, and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] The application of insect repellents to exposed parts of the body is difficult in warm weather, often ineffective, and admittedly unhygienic. Veil-type coverings are similarly inconvenient, since they obstruct the vision and hinder air circulation. This has spurred the search for special net coverings impregnated with repellents. The authors summarize the data of two series of experiments with net head coverings designed from several textiles. The first series, run in Moscow Oblast in 1973 with use of "Rebemid" insect repellent showed excellent results (tulle, cotton print, calico and Pavlovskiy netting); here the test subject experienced less than 1 mosquito bite per day (with 9 test days), air temperature ranging from 16 to 25.8°C, and relative humidity from 33 to 35%). The second series, using tulle, cotton print, calico and muslin netting, showed far worse results. Here the test subject experienced more than 19 mosquito bites, though a negligible number of gnat bites. In this series, run in Tyumenskaya Oblast in 1974, the repellent used was DETA; the temperature and humidity were about the same as in the earlier series. The authors, in general, endorse the net type of hood for outdoor workers, assuming the optimal selection of repellent. Textile coverings of this type offer the advantage of good washability. References: 11 Russian.

SPECIES AND SEASONAL NUMBERS OF SANDFLIES (DIPTERA, PHLEBOTOMIDAE) IN REGIONAL FOCI OF VISCERAL LEISHMANIASIS IN KZYL-ORDINSKAYA OBLAST, KAZAKH SSR

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 30-37  
manuscript received 15 Apr 76

KOZHANIYAZOV, S., DERGACHEVA, T. I. and GENIS, D. YE.; Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR; and Kzyl-Ordinskaya Oblast Sanitation-Epidemic Station at Kzyl-Orda

[Abstract] Kzyl-Ordinskaya Oblast every year records numbers of cases of visceral leishmaniasis, but unfortunately no systematic observations have been made of the local mosquito population. Meanwhile, the modest literature available on this subject is based largely on short-term observations made during the 1940s and 1950s, and says little or nothing about the techniques used or the species breakdown of the population; some of the information is actually contradictory. The authors began the study of Kzyl-Ordinskaya mosquitoes in 1974, continued it through 1975, and plan to pursue it in the future. They captured insects at populated points in the oblast, and also in surrounding vegetated areas and small sandy areas. Six species were studied, the most numerous in all areas being *Phlebotomus smirnovi* and *Sergentomyia arpaklensis*. The most probable cycle for any species consisted of one massive generation during the active summer period; this, in the case of *S. arpaklensis*, starts at the beginning of May and continues to mid-September, with maximal numbers of insects appearing at the end of May. In the case of *Ph. smirnovi*, males predominate throughout the season; in the case of *S. arpaklensis*, females. Since the latter species rarely attacks man, it can be eliminated as a carrier of visceral leishmaniasis, and prime interest attaches to *Ph. smirnovi* in this connection. However, the biological and ecological features of this species are still very little studied and direct proof of its role as a carrier is lacking. All this indicates the necessity of immediate additional study. Figures 2; references: 27 Russian.

EFFECT ON BODILY RESISTANCE OF ACCELERATED TRAINING IN HYPOXIA

Frunze IZVESTIYA AKADEMII NAUK KIRGIZSKOY SSR in Russian No 4, 1977  
pp 70-73 manuscript received 9 Feb 77

AYDARALIYEV, A. A., and SHANAZAROV, A. S., Institute of Physiology and Experimental Pathology of High Altitudes, Academy of Sciences Kirgiz SSR

[Abstract] Early studies by V. V. Strel'tsov (1938) are cited to show induction of increased resistance to acute hypoxia after relatively short-term training by exposure to low oxygen levels in a barochamber. Citing Leblanc's (1967-1969) work--successful adaptation to cold by prolonged exposure to moderate cold, or by repeated short-term, 3 hr, exposure to severe cold--the present article has examined several regimens of short-term hypoxic training and assessed the resistance of animals to progressive barochamber hypoxia. Animals (not identified) were "lifted" in one minute to a "height" of 6000 m and, in the following minute, to heights up to 8000 m; the animals then were "brought down" in one minute and rested 3 min. This was repeated 15 times in one series, and 30 times in another. In another series the animals were raised, 100 m/min, to 8000 m and maintained there 3 hr. In another, the animals were at 8000 m for 3 hrs, but every 15 min they were returned to the initial altitude (760 m). After completion of the training the animals were tested in a barochamber for "altitude ceiling", for oxygen tension, oxidation-reduction potential, regional blood flow, cerebral cortex temperature and rectal temperature, number of erythrocytes, and concentration of hemoglobin, in the peripheral blood. The authors found that the most effective regimen for increasing the bodily resistance to acute hypoxia is the short-term, 15 times, hypoxic training. Physiological responses of animals in this group are described. Changes in altitude ceilings for animals in each group are tabulated. Figure 1; table 1; references 10: 7 Russian, 3 Western.

USSR

UDC 612.017.1-06:613.16)-053.4+613.16:612.017.1)-053.4

NONSPECIFIC IMMUNOBIOLOGICAL REACTIVITY IN PRE-SCHOOL AGE CHILDREN WITH  
RESPECT TO CERTAIN FACTORS OF THE EXTERNAL ENVIRONMENT

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 113-115 manuscript  
received 23 Aug 76

VOZNESENSKAYA, F. M., candidate of medical sciences, Leningrad Pediatric  
Medical Institute

[Abstract] The children studied, aged 3 to 6, were in a children's home; all were of average physical development. Non-specific immunobiological reactivity (NSIR), was measured on the basis of phagocytic activity of neutrophilic leucocytes and activity of saliva lysozyme. Results were processed by the method of variation statistics. The external environment did affect the NSIR of the children. Inadequate uptake, by the children, of protein, especially of animal origin, disrupted ratios between proteins, fats, and carbohydrates in the actually eaten meals, and decreased time devoted to taking walks, promoted depression of saliva lysozyme activity, and of leucocyte phagocytic activity. The NSIR was also affected by the children's age: the two activities measured were higher in 4-5 and 6-year old children than in the 3-year olds. NSIR values were higher in all ages in summer than at other times of the year.

USSR

UDC 581.9+591.55

POSSIBILITY OF USING PHYTOCHOROLOGICAL DATA FOR GEOBOTANICAL MAPPING

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian No 9, 1977  
pp 29-33 manuscript received 20 Dec 76

VASILYUKHINA, M. A. and LAVRENKO, N. N.

[Abstract] Limits of the distribution of birch forests and steppes in the south of West Siberia and in northern Kazakhstan are compared with limits of areas of 44 boreal-plant species. Maps of the distribution of 6 species are given. The southern and northern limits of the distribution of individual plant species permit refinement of the formation-class boundaries on the territory. The presented examples permit the conclusion to be drawn that phytochorological data may serve for refining the boundaries of plant-cover subdivisions of different rank. The phytochorological method may be applied for distinguishing communities not only on the level of associations or groups of associations, but also on the level of formation classes and vegetation types. Figures 5; references 17: 16 Russian, 1 Western.

USSR

UDC 58.08:633.88:658

METHOD OF DETERMINING THE COST PRICE OF MEDICINAL PLANTS

Leningrad RASTITEL'NYYE RESURSY in Russian No 3, 1977 pp 536-540 manuscript received 3 Aug 76

SBOYEVA, S. G., First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] Studies were run in the central and southern parts of the USSR from 1970 to 1974 on the cost of obtaining 15 species of medicinal herbs. The amount of time spent on each operation (collecting, drying, processing, etc.) was totaled and the results calculated in the number of man-days required to obtain 1 ton of plant material both in terms of individual and team effort. In the case of bur marigold (*Bidens tripartita*) for example, an individual collected on the average 8.5 kg of air-dried material in a 7-hour day at a cost of 927 rubles compared to 15 kg collected by each member of a team at a cost of 728 rubles per man. The cost of obtaining this and 7 other herbs significantly exceeded the state purchase prices. Some plants are cheaper to collect than others because of their characteristics. Geographic and climatic conditions and type of labor available are other factors that affect the cost. State purchase prices should be differentiated accordingly.

USSR

UDC 633.9:582.542.1

POSSIBILITY OF USING ARUNDO DONAX L. IN THE PULP AND PAPER INDUSTRY

Leningrad RASTITEL'NYYE RESURSY in Russian No 3, 1977 pp 528-530 manuscript received 8 Jun 76

OVCHINNIKOV, YU. B. and KHE, A. F., All-Union Scientific Production Association of the Pulp and Paper Industry, Astrakhan' Branch

[Abstract] The grass *Arundo donax* is widely distributed in the Mediterranean basin. In the USSR, it grows in Transcaucasia and some southern regions of Central Asia. It yields 25 to 75 tons/ha of foliage in air-dried condition. It grows in dry valleys and does not require regular irrigation. A comparison of the chemical composition of *Arundo donax* stems with that of the common reed *Phragmites communis*, one of the best of the nonwoody plants used in the paper industry, showed that they possess about the same quantities of cellulose, lignin, pentosans, resins, fats, and ash. The tensile strength of *Arundo donax* is also comparable. References 8: 7 Russian, 1 Western.

USSR

UDC 616.9-036.25

CLINICAL FEATURES OF IMPORTED INFECTIOUS DISEASES

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
Vol 46, No 4, Jul/Aug 77 pp 397-402 manuscript received 1 Feb 77

POKROVSKIY, V. I., and ASTAF'YEVA, N. V., Department of Infectious Diseases,  
Moscow Medical Stomatological Institute imeni N. A. Semashko

[Abstract] Infectious diseases, exotic to the USSR and those found universally, pose increasing danger to the Soviet Union as its relations with foreign lands increase. The authors relate their experience with this subject, 1965-1976, at the isolation department of Moscow Municipal Clinical Infectious Diseases Hospital No 2 which had received Soviet and foreign patients from Africa, Asia, and Latin America; diseases seen were transmissible (46.4%, 203 cases) and intestinal (49.8%, 281 cases). *P. falciparum* was the cause of 75% of imported malaria. *S. flexner* and *S. sonnae* were the prime causes of intestinal infection. Amebiasis cases were severe in Soviet patients and complications involved liver abscess, diffuse amebic hepatitis, and perforation of the large intestine. Incidence of diseases among the patients did not reflect disease morbidity among the natives of the foreign lands; diseases such as schistosomiasis and dengue, for example, were rarely encountered, whereas dysentery was frequently encountered. References: 9 Russian

USSR

UDC 576.895.421.01 (574.54/.55)

DISCOVERY OF TERRITORIES WITH VERY HIGH POPULATION OF IXODID TICKS IN THE TRANSBAIKAL CONSTRUCTION SECTOR FOR THE BAYKAL-AMUR RAILWAY

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
Vol 46, No 4, Jul/Aug 77 pp 394-397 manuscript received 24 Jan 77

GORIN, O. Z., BYALAYA, I. V., SHIKHARBEYEV, B. V., Irkutsk Scientific  
Research Institute of Epidemiology and Microbiology, Ministry of Health  
RSFSR

[Abstract] The territories of interest are the Myusko-Kuandin Basin (Bauntovskiy Rayon of the Buryat ASSR, and Kalarskiy Rayon of Chitinskaya Oblast) and areas adjacent to them. In the summer of 1975, reports came in of the tick presence and tick attacks on workers at the Severo-Muyskiy Tunnel, the upper rivers of Kelyarna, Koyra, Kuanda, and the environs of future Mokskaya Hydroelectric Power Station (HEPS). The severest incidence was in the vicinity of the Mnogoobeshchayushcha Kosa village. These are forest-free lands with cereal grasses and wormwood plants on southern



or southeast mountain slopes and steep banks of the Vitim waterways from the Mokskaya HEPS area to Spitsyno Station. The parasitological studies were made from 26 April to 28 May 1977. The dominant tick is the *Dermacentor silvarum* Ol; *Ixodes persulcatus* P. Sch. is relatively rare. Prophylaxis should include vaccination against tick-borne encephalitis, and, also, tick eradication. No references.

USSR

#### NATURAL FOCUS OF TULAREMIA IN DZHEZKAZGANSKAYA OBLAST

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77 pp 59-60

AYKIMBAYEV, M. A., director of the Central Asia Scientific Research Plague Control Institute, CHIMIROV, O. B., TREULGABYLOV, M. K. and BAYTANAYEV, O.A.

[Abstract] The subject oblast is in a dry steppe zone with very poor environmental conditions. Anti-tularemia antibodies in dilutions of 1:10, and 1:80 have been found in 2.7-9.0% of cases of all cattle examined in the Zhana-Arkinskiy and Shetskiy Rayons of the oblast. In 1967 tularemia was found in one individual in central Shetskiy Rayon, Aksu-Ayuly village. No source of infection was found in the epidemiology investigation, and no cases were seen in that village. In 1968 prophylactic vaccination against tularemia was carried out in the rayon. The authors undertook epizootological and serological studies in the two rayons cited, in May/July 1975. They captured wild animals, mostly field, wood, and house mice. Examination of 955 cattle yielded 5051 ixodid ticks, *Dermacentor marginatus*. Serological, bacteriological, and biological tests of the cattle were negative. Serological analysis of birds and mammals (e.g., foxes) for tularemia antibodies in excrement were positive (and were confirmed by the Gamaleya Institute, in Moscow). It was believed quite likely that a tularemia epizootic occurred in the area in the fall/winter of 1974. The area of north-east Dzhezkazganskaya Oblast is assumed to be a natural focus of tularemia, and further study is recommended of its spacial, epidemiological, and epizootical structure.

USSR

# CLINICAL AND EPIDEMIOLOGICAL FEATURES OF BOTULISM

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77 pp 24-25

ALTYNBEKOV, M., Chief epidemiologist, Chimkent Oblast Department of Public Health

[Abstract] Nine incidences of botulism were reported in Chimkent Oblast from 1967 to 1973, affecting 26 persons, aged 9 to 69. The botulism was caused by eating preserved foods: in 10 patients the use of mushrooms, in 10, cucumbers, in 6, tomatoes, marinated under home conditions. Eight of the poisonings, affecting 25 people, were registered in winter-spring (December to May); one case was in late September. Diagnosis was based on clinical-epidemiological data, and confirmed by laboratory findings. Botulism type A agent was found in 18 patients, type B in 8. Clinical features are presented by the author: injury to the nervous system, ophthalmological syndrome, nasopharyngeal and glossoneurological symptoms, and injury to the digestive organs. The patients received anti-botulism serum, detoxication, general supportive measures, antibacterial therapy and symptomatic treatment. Four deaths occurred. The author suggests need for hygiene propaganda during the season of home preservation of foods. No references.

USSR

UDC 616.99-022.375(479.24)

# STUDY OF IMPORTATION OF PARASITIC DISEASES BY FOREIGNERS INTO THE AZERBAIDZHAN SSR

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 4, Jul/Aug 77 pp 402-405 manuscript received 9 Nov 76

DZHAVADOV, R. B., CHOBANOV, R. E., ALIYEVA, S. I., SAFARALIYEV, R. S., ALIYEVA, KH., KH., and KURBANOVA, M. A., Azerbaydzhan Scientific Research Institute of Medical Parasitology and Tropical Medicine imeni S. M. Kirov

[Abstract] Hemoscopic and fecal ovoidoscopic examinations were carried out once on 1454 individuals from 60 warm countries who had come to Baku to study. Of these, 548 were examined for schistosome eggs in the urine and 275 for fecal protozoa. Malarial agents were found in 20 (15 Africans with *P. falciparum*, 4 Africans and 1 Indian with *P. vivax*. N.B., here the editors suggest that the latter 4 Africans had actually had *P. ovale*, mistakenly described as *P. vivax*). Helminths were found in 1012; 58.5% had polyinfestation. Sixteen species of helminths were found: 8 nematoda, 4 cestoda, and 4 trematoda. Of the 275 tested for protozoa, 65 were

positive. The authors emphasize the need for examination of incoming persons from tropical countries for the prophylaxis of parasitic diseases. References 6: 5 Russian, 1 Western.

USSR

UDC 59:061.3:598.2

INTERNATIONAL CONFERENCE ON THE TRANSCONTINENTAL RELATIONS OF MIGRATORY BIRDS AND THEIR PART IN SPREADING ARBOVIRUSES

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 56, No 5, May 77 pp 803-804

KUROCHKIN, YE. N.

[Abstract] A conference on bird migrations and their part in spreading arboviruses was organized by the Biology Institute of the Siberian Department of the Soviet Academy of Sciences and the Institute of Poliomyelitis and Viral Encephalites of the Academy of Medical Sciences USSR. The conference was held in Novosibirsk from 28 July to 1 August 1976. A. I. Cherepanov, director of the Biology Institute, was the chairman of the organizational committee and the president of the conference. The last such conference was held in Novosibirsk in 1969. The latest conference was divided into three sections: 1) bird migration; 2) morphology and ecology of viruses; 3) birds, insects and mites in maintaining and spreading viral infections. All the problems dealt with at the conference were discussed in the light of Ye. N. Pavlovskiy's ideas on natural nidal diseases. Taking part in the conference were 150 representatives of Soviet organizations and institutions as well as 26 foreign scientists from 17 nations including Indonesia, Iran, Iraq, Nigeria, CEMA countries, Western Europe and North America. Some of the most important reports dealt with migrations and banding, new data on detecting strains of viruses in mosquito blood, discovery of vectors of tick encephalitis in new territories (Greece) and parasitological and virusological studies of migratory and nonmigratory birds.

USSR

UDC 599.323.4 Lemmus et Dicrostonyx:616.981.455(571.511)

CONFIRMATION OF EPIZOOTIC TULAREMIA IN LEMMINGS ON THE EASTERN TAYMYR  
PENINSULA BY SEROLOGICAL EXAMINATION OF BIRD DROPPINGS

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 56, No 5, May 77 pp 801-802  
Mo

ALGAZIN, I. P. and BOGDANOV, I. I., Omsk Scientific Research Institute of  
Natural Nidal Infections

[Abstract] Serological studies of the droppings of predatory birds and the mummified cadavers of Siberian and arctic collared lemmings on the territory of the Taymyr National Okrug revealed the antigen of the Tularemia microbe. The antigen was detected in titers of up to 1:1280 in 50.4% of the droppings and in four mummified cadavers, indicating that there was an outbreak of epizootic tularemia in lemmings in this area in the autumn of 1973. The results show that lemmings are an important agent in spreading the vector of tularemia in natural nidi of the higher latitudes.

References: 3 Russian.

USSR

UDC 616.995.132.8-056.76-084.4

ORGANIZATION OF THE CONTROL OF ENTEROBIASIS IN FAMILIAL FOCI OF THIS  
INFECTION

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical  
Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 82-87  
manuscript received 26 May 75

ZHITNITSKAYA, E. A. and KOLOKOL'TSEV, M. M., Irkutsk Municipal Sanitation  
and Epidemic Station

[Abstract] One of the principal causes of the high incidence of enterobiasis among Soviet pre-school children in day nurseries is the unsatisfactory state of sanitation in the home situation. These "familial foci", however, have been very little studied, and we know almost nothing about the distribution of the eggs of the parasite or the conditions favoring transfer of the illness from person to person. The authors undertook the study of 195 families sending their children to day nurseries. Of these, the children of 119 families were infected with pinworm eggs, and those of only 76 were free of the parasite. Various objects coming in contact with the children's bodies were studied (furniture, carpets, toys, toilet facilities, books, doorknobs, and the like). Simple disinfection of all such objects (especially underwear) is strongly recommended. Summary data on infestation are given, but specific disinfection measures are not described. References: 2 Russian.

## INTRODUCTION OF FILARIASIS INTO THE USSR FROM TROPICAL COUNTRIES

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 78-82  
manuscript received 16 Oct 75

SUPRYAGA, V. G., FEDDER, M. L., BELYAKOV, N. K., KHODAKEVICH, L. N.,  
MOZGOVOY, YE. P. and DARCHENKOVA, N. N.; Institute of Medical Parasitology  
and Tropical Medicine imeni Ye. I. Marsinovskiy, Ministry of Health USSR,  
Moscow

[Abstract] Filariasis until quite recently was completely unknown in the USSR. Beginning in 1968, its presence was definitely established by blood examinations made by A. A. KUDRINA, T. S. BESEDINA, N. A. KHOKHOL'KOVA, and A. S. KRASIL'NIKOV. The authors' studies, extending from 1969 through 1975 were aimed at continuing this earlier work. Subjects consisted of foreigners present for extended periods in the cities of Moscow, Rostov-on-Don, Voronezh and Baku; these numbered 1,868 persons, coming from 29 African countries, 22 Asian countries and 17 Latin American countries. Examinations were made at once upon arrival in the USSR, and within a few months following. Of the total group of subjects, Microfilariae were found in the blood of 97 persons, the greatest number of these coming from West and Central Africa. The most prominent form of the disease was dipetalonemiasis (79%), followed by wuchereriosis (16%), with insignificant representations of the other forms. Intensity of the infection was low in most patients. In view of the relatively unknown behavior of filariasis in temperate and cold climates, the authors emphasize the necessity of continued and more intensive research. References: 11 Russian.

USSR

UDC 639.2.053(571.1/5)

THE BAYKAL-AMUR RAILROAD AND SOME PROBLEMS OF BIOLOGICAL FISH MANAGEMENT  
SCIENCE

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, SERIYA XVI, BIOLOGIYA in Russian  
No 1, Jan/Mar 77 pp 38-41 manuscript received 15 Sep 76

NIKOL'SKIY, G. V. (deceased), SAVVAITOVA, K. A., SOKOLOV, L. I. and  
MAKSIMOV, V. A., Department of Ichthyology, Moscow University

[Abstract] A discussion of two groups of problems involving the effect of the Baykal-Amur Railroad on the Fishing industry: 1) how to provide fresh and live fish to the population from bodies of water located close to the railroad; 2) how the railroad and the industries that spring up near it will influence the reproduction and general life cycle of ichthyofauna. From the standpoint of biological fish management science, an urgent problem to work out is the kind of ecosystems for the different bodies of water in the vicinity of the railroad that will yield the maximum fish production. In this regard, species for stocking must be chosen that give the most valuable products and that can make optimum use of natural food. Some peculiarities of arctic and subarctic species of fish in inland waterways are considered as well as the characteristics of the different kinds of lakes and streams in the vicinity of the railroad within a range of 200-300 km and the steps that must be taken to keep fish production and quality high. It is pointed out that many reservoirs are being planned in this territory, and that ichthyological research should be completed before completion of these lakes. It is possible that the heat from electric power plants and industries could be useful in prevention of freezing and thus could increase the yield of fish. The problems associated with permafrost in this territory are discussed. Forestry management is also an important factor, especially where the railroad crosses rivers. Steps should be taken to prevent pollution of the rivers as well. References 8: 7 Russian, 1 Western.

USSR

UDC 591.524.12:628.394

CHANGE IN POPULATION OF ZOOPLANKTON UNDER THE EFFECT OF OIL SPILLS AND  
DISPERSING AGENTS

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, SERIYA XVI, BIOLOGIYA in Russian  
No 1, Jan/Mar 77 pp 30-33 manuscript received 6 Sep 76

KOROLEVA, A. M., Department of Hydrobiology, Moscow University

[Abstract] An investigation is made of the effect that oil products and dispersing agents have on the general population of zooplankton in the White Sea. The fauna studied included crustaceans of suborders of Calanoida and Harpacticoida, larvae of benthonic animals, and rotifera. Oil products investigated were diesel fuel and motor oil, and surfactants used were Corexit-7664 (Esso Chemical S. A.) and the Soviet-made diproxamine 157. The additives were studied in concentrations up to 250 mg/L. A complete factor arrangement  $3^2$  was used in the experiments, and regression equations were derived from the results, showing the zooplankton population as related to different concentrations of oil products and dispersants. These equations show that both oil spills and surfactants have a negative influence on zooplankton population. The organisms begin to die when diesel fuel concentrations exceed 1 mg/L, and the results are similar for higher concentrations of motor oil, the degree of the effect increasing with time of exposure. Diproxamine reduces zooplankton population in concentrations of 250 mg/L, and Corexit is toxic in concentrations as low as 50 mg/L. Diproxamine does not reduce the zooplankton population in concentrations of 100 mg/L in 4-day experiments, but the organisms do begin to die after 7 days. Combining surfactants with petroleum products does not reduce the degree of toxicity of the latter, and in fact the detrimental effect is additive. The author thanks Professor M. Ye. Vinogradov for guidance and advice. Figures 2; references 7: 2 Russian, 5 Western.

USSR

UDC 576.8:665.63(268.4)

FUNCTIONING OF MICROORGANISMS IN AQUATIC ECOSYSTEMS. I. MICROBIAL  
DEGRADATION OF PETROLEUM IN THE ARCTIC OCEAN

Moscow BIOLOGICHESKIYE NAUKI in Russian No 8, 1977 pp 110-119 manuscript  
received 31 Jan 77

GUSEV, M. V., SENTSOVA, O. YU., KORONELLI, T. V., IL'INSKIY, V. V. and  
FEDOROV, V. D., Moscow Skate University

[Abstract] Hydrocarbon-oxidizing microorganisms are widespread in the Arctic Ocean and their abundance is related to the level of oil pollutants. Many of them can grow in the presence of trace quantities of organic matter.

Certain microorganisms do not utilize petroleum products but nevertheless tolerate them in high concentrations. Active hydrocarbon-oxidizing strains of the genus *Mycobacterium* are capable of degrading petroleum in a wide range of temperatures regardless of the salinity of the water. (An oil film disappeared in 2 to 4 days under laboratory conditions). The decisive factor in the degradation of diesel fuel by Arctic microorganisms is the nitrogen concentration of the water. Figure 1; references 29: 15 Russian, 14 Western.



USSR

UDC 616.993.162-092.9-07:616-008.9-097.5

DYNAMICS OF IMMUNOMORPHOLOGICAL REACTIONS IN WHITE MICE SUBJECTED TO  
EXPERIMENTAL CUTANEOUS LEISHMANIASIS

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical  
Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 73-78  
manuscript received 1 Jul 75

AGAYEVA, R. K., DOBRZHANSKAYA, R. S., KARIMOV, SH. M. and VOLOKHOVSKAYA,  
Z. P., Turkmen Scientific-Research Institute of Skin Diseases, Ashkhabad

[Abstract] Many researchers have demonstrated that after an extended episode with cutaneous leishmaniasis, the human victim develops a stable, highly effective and extended immunity to the disease. The origin of this immunity is highly uncertain, though most observers consider it to be cellular. The authors approach the problem from the point of view of the reticuloendothelial system of white mice during the progress of induced leishmaniasis. A group of nearly identical white mice (167 individuals) was used as test animals. During the initial stage of the disease (1-2 months), inflammation occurred in the skin, the subcutaneous tissue, and sometimes in the muscles. The infiltrate, consisting of histiocytes, lymphoidal and epithelioidal cells, was strongly vascularized. The lymph nodes showed strong accumulation of blood, and hyperplasia of the follicles and pulp. The spleen showed hyperplasia of the follicles and polyemia of the sinuses, with swelling of the endothelium and proliferation of reticular cells. During the advanced stage of the disease, rapidly developing ulcers reaching diameters up to 2-2.5 cm appeared in the tail area. Similar enlargements and infiltrations to those of the early stage were present. Remission appeared in 3-6 months. It is believed that both a cellular and a humoral mechanism are involved in the development of leishmaniasis in white mice. References: 21 Russian.

USSR

UDC 547.963.3:576.858.9

IMMUNOGENIC DNA OF SHIGELLA SONNEI BACTERIOPHAGE

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian No 2, 1977 pp 323-331 manuscript  
received 4 Mar 76

ZAMCHUK, L. A., MAGRADZE, N. M. and GOL'DFARB, D. M., Institute of General  
Genetics, Academy of Sciences USSR, Moscow

[Abstract] The article reports the results of a study of the immunogenic and some other properties of both Ufa Shigella sonnei bacteriophage DNA and intact bacteriophage particles. Ufa Sh. sonnei bacteriophage DNA has a

double strand, a molecular weight of  $1.11 \times 10^8$  daltons, and a melting point of  $85.5^\circ$ . Its specific immunogenic activity is indicative of the presence of an unusual nitrogen base. Sera from rabbits immunized with antigens containing  $T_2$  and  $T_4$  bacteriophages did not react in the complement-fixation test with Ufa Sh. sonnei bacteriophage DNA. On the other hand sera from rabbits immunized with methylated bovine serum albumin and Ufa bacteriophage DNA reacted in the same test with homologous DNA in high dilutions but did not react even in lower dilutions either with nonglucosylated DNA of the mutant bacteriophage  $T_4$  alpha gt am 8 beta gt am 10 or with DNA from wild  $T_2$  and  $T_4$  bacteriophages containing completely or partly glucosylated 5-hydroxymethylcytosine. Experiments involving the cross neutralization of intact bacteriophage particles with the corresponding immune sera confirmed the presence in the  $T_4$  bacteriophage capsid of antigens common to Ufa Sh. sonnei bacteriophage antigens. Figures 5; references 30: 9 Russian, 21 Western.

USSR

UDC 576.858.6.07

USE OF VIRAL ENVELOPE ANTIGENS IN THE DIFFERENTIATION OF D-TYPE (ILYINBYKOVSKIY) VIRUS DERIVED FROM CONTINUOUS HUMAN CELLS AND MASON-PFIZER MONKEY VIRUS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8, 1977 pp 208-210 manuscript received 10 Nov 76

IL'IN, K. V. and KRYUKOVA, I. N., Laboratory of Sarcoma/Leukosis Viruses, Department of Tumor Etiology and Immunology, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR

[Abstract] Two-dimensional immunodiffusion, immunoautoradiography, and virus neutralization tests were employed to demonstrate antigenic differences between the Ilyin-Bykovskiy virus (IBV) and the Mason-Pfizer monkey virus (MPMV). The results showed that absorption of antisera directed against either virus with the gs-antigens rendered such sera specific in neutralization tests using human embryonic tissue cultures, i.e., the anti-IBV sera neutralized only IBV and not MPMV, while anti-MPMV sera neutralized MPMV but not IBV. The demonstration that the envelope antigens of these viruses are distinct suggests that they should be regarded as distinct entities and that the association of IBV with certain human tumors--mammary fibroadenomas and carcinomas--does not per se represent contamination with MPMV. Figures 2; references 16: 10 Russian, 6 Western.

USSR

UDC 616-002.5-092.9:613.2

METHOD OF EVALUATION OF BODILY RESISTANCE TO THE ACTION OF UNFAVORABLE FACTORS

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 79-83 manuscript received 9 Sep 75

CHISTYAKOV, M. G., IL'YINSKAYA, R. D., BOROVNIKOV, O. V., PARAKHONSKIY, A.P., and SINITSINA, G. M., Kuban Medical Institute imeni Krasnaya Armiya, Krasnodar

[Abstract] A study was made of the effect on 100-120 g rats of a diet which included foods (eggs, milk) obtained from cattle and chickens whose fodder had contained, as 25% of their protein, yeasts grown on petroleum distillates. Control rats were fed a diet which included food items from traditionally-fed cattle. The milk and egg products in both diets for the rats supplied 64.9% of proteins, 92.5% of fats, 5.6% of carbohydrates, and 45.4% of the calories. Half of the animals of each group were fed for 3 mos, half for 6 mos. At the end of the period the animals were inoculated with bovine tuberculosis. Both diets used were found to provide high quality nutrition, and were qualitatively equivalent food sources. The diet containing the foodstuffs from yeast-fed cows and chickens had no effect on the development of the tubercular process in the rats. Tables 3; references 11: 5 Russian, 6 Western.

USSR

UDC 576.809.518

FLOTATION OF CANDIDA UTILIS YEAST CELLS UNDER THE ACTION OF LOW pH OF THE MEDIUM

Moscow PRIKLADNAYA BIOKIMIYA I MIKROBIOLOGIYA in Russian Vol 13, No 3, May/Jun 77 pp 377-381 manuscript received 12 Sep 76

RABOTNOVA, I. L., LIROVA, S. A. and RIZENBERG, D., Institute of Microbiology, Academy of Sciences USSR

[Abstract] The authors studied the physiological state of yeast cells *Candida utilis* VKMU 1668 as the pH was rapidly changed from the optimum value of 4.5 to the growth-inhibiting value of 2.25. The purpose of the work was to study adhesion of the yeast cells after such a shock. It was found that a sharp drop in pH causes the yeast cells to rise to the surface with air bubbles. The greatest accumulation of biomass in the upper layer of the culture fluid is observed within 40 minutes after action of the inhibitor. The amount of biomass then begins to fall, and after about two hours is on the level of the control. An increase in the concentration of hydrogen

ions in the culture medium changes the physiological properties of the yeast cells. Endogenic respiration in the floated cells gradually increases in comparison with the submerged cells. And at the same time the exogenic absorption of oxygen and release of carbon dioxide in the "top" cells decreases as compared with the "bottom" cells. The higher respiratory indices of the "top" cells indicate predominance of anaerobic energy paths of oxidation of the substrate (glycerin). Flotation lasts for about an hour, and practically all cells are alive without any decrease in protein content. The authors thank S. I. Ibragimova and Ye. M. Shul'govskaya for assistance with the work. Figures 3; references 5: 3 Russian, 2 Western.

USSR

UDC 614.72

CONTAMINATION OF THE AIR IN A LOCALE OF INDUSTRIAL ENTERPRISES WITH  
INSTALLATIONS PLACED ON OPEN SITES

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 101-102 manuscript  
received 16 Nov 76

PETROVA, N. I., candidate of medical sciences, YEREMEYEV, A. D. and  
GOLOVKO, V. M., Gorlovka, Donetskaya Oblast

[Abstract] Placement of technological installations in an open area often leads to exceeding the maximum permissible levels (MPL) of toxic substances in the environment. Such contamination can be lessened by remote control of plant processes, automation, and tight sealing of the operations. Regulations for certain industrial manufacturing procedures are cited by the authors. In this connection the Gorlovka municipal sanepid station has studied the air of the working zone of the local Coke Chemical Plant. While the immediate working area did not show contamination over the MPL, the air at a distance of 1000 m was polluted with maleic anhydride, phenol, and phthalic anhydride, from time to time. At 500 m, concentration of hydrogen sulfide exceeded the MPL by a factor of 8. The authors stress that safe levels of toxic substances at the plant site do not guarantee that the surrounding area, which does include a housing area, is free of contaminants. For the type of plant they have studied, they recommend that the "Rules of Safety in Coke Chemical Industries, 1971", particularly paragraphs 267 and 543, be reviewed for the sake of adherence to MPL standards. References: 4 Russian.

USSR

UDC 614.72

EFFECT OF ATMOSPHERIC CONTAMINATION ON HEALTH OF THE POPULATION

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 107-108 manuscript  
received 18 Nov 76

DAUTOV, F. F. and YARULLIN, A. KH., candidates of medical sciences, Kazan  
Medical Institute imeni S. V. Kurashov

[Abstract] Contamination from a petrochemical enterprise which produces high pressure polyethylene, ethylene oxide, organic peroxides, phenol, and acetone is examined. Adjacent (1 km) to the site is a housing complex, and another at 2 km. Studies were made, 1967-1976, of contamination of the housing areas; only the air content of ethyl oxide, and phenol exceeded maximum permissible levels, MPL (by a factor of 1.2-1.5). Contamination by various chemicals increased, of course, when the wind direction was from the

installation for decontamination of plant exhausts. At a distance of 22 km, contamination was absent. Study was made of morbidity, especially of children, in the two areas (adjacent and 22 km), to determine the influence, on health, of the contamination. Data showed higher incidence of disease in the housing area than in the uncontaminated area (considered were respiratory tract affections, pneumonia, and influenza). Non-specific immunity was also lower in the contaminated area. The findings can be used to initiate corrective hygienic measures for the enterprise and its environs. Reference: 1 Russian.

USSR

UDC 613.644:658.516

#### NEW STANDARDS FOR SOUND AND VIBRATION

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 109-110 manuscript received 7 Oct 76

SUVOROV, G. A. and DENISOV, E. I., Scientific Research Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Abstract] The Soviet Union is currently developing state standards (GOST) for sound and vibration factors. The authors distinguish between standards of emission--involving machines as sources of harmful factors--and standards of immission--involving factors at the work site which act upon the workers. With respect to the latter, these are being developed on the basis of hygienic requirements which establish permissible indices of acoustic or of a vibrational field at work places (or in work zones) in the form of maximum permissible levels of sound pressure or oscillating rate in octave ranges of frequency; these make it possible to evaluate the degree of sanitary well-being of a given environment. The authors discuss the problems involved in establishing standards and cite specific GOSTs. Periodic review of these GOSTs, based on experience in their application, assures continued improvement of standards.

USSR

UDC 616.12-008.3-02:613.632

DISORDERS OF AUTOMATISM, EXCITABILITY, AND CONDUCTIVITY DURING THE PRO-  
LONGED ACTION OF SUBTHRESHOLD CONCENTRATIONS OF SOME CHEMICAL SUBSTANCES  
UPON THE ORGANISM

Moscow KARDIALOGIYA in Russian No 5, 1977 pp 128-133 manuscript received  
11 May 75

GONCHAROVA, L. N., VAYNFEL'D, I. YE., GOLOVACHEVA, T. V. and  
KISELEVA, G. N., Department of Therapy (Chief, Prof. L. N. Goncharova) of  
the Faculty for Advanced Training of Physicians, Saratov Medical Institute

[Abstract] In a study of automatism, excitability and conductivity among  
persons in contact with toxic substances during the production of phenol,  
nitrocellulose fiber, and acrylic-acid nitrile, 689 persons engaged in the produc-  
tion of these substances revealed disorders in those functions. These  
changes reflect the effect of industrial agents upon the conductivity  
system of the heart. References 23: 11 Russian, 12 Western.

USSR

CLINICAL FEATURES OF Q FEVER

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77, pp 36-37

TSOY, D. CH., SHVETS, M. YA. and RAPOPORT, L. P., Municipal Infectious Diseases Hospital

[Abstract] Study was made of 91 patients hospitalized at the title hospital in Chimkent, 1968-1970. Q fever of average severity occurred in 78% of Chimkent Oblast. Incubation period was 9-20 days; it often (82%) began acutely. Fever lasted 6-12 days in 83% of the patients. Injury to the cardiovascular and urinary systems was insignificant. Inflammation of the lungs or bronchi occurred in 18% of the patients. All showed damage to the gastro-intestinal tract; at the climax, 24% displayed leucopenia, 28% leucocytosis. Complement fixation test with an antigen from Burnetts' rickettsia showed a rise in titer up to the 19-20th day of the disease, then a decrease. Clinical forms, based on Musabayev and Abudakirova, 1961, included: typhoidal, 41%; influenza-like, (29%); bronchopneumonia, 18%; pseudobrucellar, 6%; and mixed, 6%.

USSR

UDC 614.449.57:576.895.773)+576.895.773.095.18:615.285.7

TRIAL OF THE STERILIZING ACTION OF PHOSPHORIC ACID HEXAMETHYLTRIAMIDE (HEMPHA) AGAINST PROTOPHORMIA TERRAENOVAE R-D

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 46, No 4, Jul/Aug 77 pp 431-434 manuscript received 13 Jan 77

BAKIYEV, I. S., Department of Biology, Aktyubinsk Medical Institute

[Abstract] Disadvantages of insecticides, and, also, the problems associated with chemical sterilants (e.g., alkylation, and carcinogenicity in warmblooded animals and man) led the author to test a non-alkylating, sterilizing agent, hempha, which is described as less toxic for man and warmblooded animals. The title P. terraenovae were obtained from the culture of the Martsinovskiy Institute of Medical Parasitology and Tropical Medicine; tests were made in 1975 under laboratory conditions. Feeding of 0.1, 0.3, and 0.5% solutions of hempha in 10% sugar solution reduced viability of eggs laid by females by 78 to 100%. Feeding the parental generation reduced survival rate of the progeny. Free field trial feeding of the agents (1% in rotting meat or in 30% sugar solution) reduced viability of eggs of flies trapped on the exposed baits by 90% and 55.2% respectively--this difference was attributed to the degree of attractiveness of the exposed baits and amount of sterilant consumed. Tables 2; references 9: 6 Russian, 3 Western.



USSR

SOME CENTRAL NERVOUS SYSTEM COMPLICATIONS IN Q FEVER PATIENTS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77 pp 39-40

LEVINSKAYA, M. V., chief, Infectious Diseases Department, Rayon Hospital, Enbekshi-Kazakhskiy Rayon, Alma-Atinskaya Oblast

[Abstract] Functional and organic injury to the central nervous system occurs often in Q fever patients, but the authors note few reports on changes in cerebral fluid or on vascular damage. They report that they have seen meningeal symptoms combined with general infection in 11 (5.2%) of 212 Q fever patients treated at the "statsionar" hospital. All 11 complained of severe head and retroorbital pain; 10 had insomnia, 2 had delirium and hallucinations; 6 had photophobia. All experienced nausea, and frequent vomiting, not related to eating. Hypesthesia occurred in 8, in 1 of these horizontal nystagmus, asymmetry of the nasolabial folds, instability in the Romberg pose; another had foot clonus. Spinal puncture improved the condition and relieved the headache. Some spinal fluid showed lymphocytic pleocytosis, positive Pandy test, and increased protein. The patients with complicated serous meningitis all experienced a favorable outcome of the disease. One case is described in detail. The author suggests that patients in the neurological department be checked for presence of Q fever, in order to institute appropriate therapy.

USSR

UDC 573.1:663.14

ROLE OF SOME AMINO ACIDS IN THE METABOLISM OF THE YEAST SACCHAROMYCES CEREVISIAE WHEN GROWN IN ALCOHOL

Riga IZVESTIYA AKADEMII NAUK LATVIYSKOY SSR in Russian No 4, 1977 pp 26-35

DAMBERG, B. E. and POPOVA, M. V., Institute of Microbiology imeni Avgust Kirkhenshteyn, Academy of Sciences, Latvian SSR

[Abstract] In media containing alcohol as the sole carbon source, Saccharomyces cerevisiae cells skip the stage of aerobic glycolysis and oxidize the alcohol directly. The cells start to grow after a long lag phase. The addition to the alcohol medium of 0.075% L-glutamic or L-aspartic acid or oxidized or reduced glutathione markedly increases the biomass and survival rate of the yeast cells during dehydration and subsequent rehydration. On the other hand, the addition to the medium of cysteine, homocysteine, methionine, lysine, or ornithine sharply inhibited the growth of the yeast cells and altered the biochemical properties of their biomass. Figures 5; references 33: 10 Russian, 23 Western.

USSR

UDC 576.851.45.095.38:576.895.775].077.3

DETECTION OF THE PLAGUE VECTOR IN FLEAS BY A SEROLOGICAL METHOD

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vo  
Vol 46, No 3, May/Jun 77 pp 359-361 manuscript received 22 Dec 75

LEVI, M. I., PUNSKIY, YE. YE., KIIKO, V. F., ADAMENKO, N. I., KOCHKAREVA,  
A. V., KOBYLKOVA, L. YE. and TRAUB, L. A., Moscow Disinfection Station

[Abstract] *Xenopsylla gerbilli* fleas were infected under experimental conditions with virulent plague vector No 3781, and a suspension of the insects was then used to inoculate various nutritive growth media. After 48 hours of incubation at 37°C, the medium was washed out with 4 ml of saline solution containing 4% formalin. After 1 hour the disinfected solution was studied in the passive hemagglutination reaction with plague erythrocyte antigen and in the antibody-neutralizing reaction with plague erythrocyte antigen. After studying several media, the authors selected Hottinger's agar with 0.03% sodium sulfite, 0.0003% gentian violet and 1-3% surfactant OP-7. The plague vector was identified by detection of encapsulated plague antibody in the nutrient medium, using the above-mentioned serological reactions. Field tests of the proposed method show that it is as effective as the conventional bacteriological technique, and enables the research worker to operate with harmless material on the conclusive stage at almost any time after growth of the material. The method can be used in field conditions for investigating large territories where epizootic disease may be suspected, and for studying remote sections of plague foci. References: 5 Russian.

USSR

UDC 576.858.77.083.1

GLYCERIN AS A PRESERVATIVE OF THE DENSONUCLEOSIS VIRUS OF *Aedes aegypti* L.

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 113-114 manuscript received 15 Jun 73

ZELENKO, A. P., BUCHATSKIY, L. P. and LEBEDEVA, O. P.; Kiev University imeni T. G. Shevchenko

[Abstract] The use of glycerin (50%) on a phosphate buffer for the preservation of the densonucleosis virus of *Aedes aegypti* L. was first described by A. K. SHUBLADZE and S. YA. GAYDAMOVICH in 1954, and later used by one of the present authors (O. P. LEBEDEVA) in 1972. Since the defensive role in preservation of the virus appears to be played by organic materials within the body of the insect, the authors used mainly living mosquito larvae ill

with denonucleosis, but also ran tests with dead larvae and pupae to determine which material is most infectious in the case of glycerin preservation. Results were as follows: In the infection of healthy mosquito larvae with virus which had been stored for 2 years, virulence of the virus had dropped by about 45.5%. In the case of 6-month preservation, a similar virus showed an increase of 10% in pathogenic properties. Electron microscopic examination showed hexagonal virus particles of about 20 nm diameter, in which there were no morphological changes. References 4: 3 Russian, 1 Western.

USSR

UDC 576.3.088

INVESTIGATION OF THE STRUCTURE OF CHROMOSOMAL ABERRATIONS IN A CULTURE OF HUMAN LYMPHOCYTES WHEN PROTECTORS ARE INTRODUCED

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 30, No 6, Jun 77  
pp 94-96 manuscript received 26 Jan 77

YEGIAZARYAN, S. V., Department of Genetics and Cytology, Yerevan State University

[Abstract] A comparative analysis is done on the spectrum of chromosomal aberrations in a lymphocyte culture under the action of the mutagen thio-tepa and protectors cystaphos, aminopropylaminoethylthiophosphoric acid (APAETP) 2,3 and 3,3. The distribution of chromosomal aberrations resulting from treatment with the various chemicals is summarized in tables. The action of the protectors shows up in a reduction of the level of isolated acentric fragments. This may be associated with the later periods of the cellular cycle unaccompanied by transition of chromatid divisions to isochromatid divisions. It was found that the ratio of paired to isolated fragments differs under the action of the mutagen and the protectors, which may be evidence of the effect of the protectors on the later stages of the cellular cycle due to the reduction in the level of isolated acentric fragments. References 5: 4 Russian, 1 Western.

USSR

UDC 577.156

MUTATIONS OF BACILLUS SUBTILIS REDUCING ITS PROTEOLYTIC ACTIVITY AND THEIR INFLUENCE ON THE FORMATION OF MULTIPLE MOLECULAR FORMS OF SUBTILISIN

Moscow BIOKHIMIYA in Russian Vol 42, No 8, Aug 77 pp 1478-1486 manuscript received 21 Dec 76

ABRAMOV, Z. T., YERMAKOVA, L. M., YEROKHINA, L. I., LYUBLINSKAYA, L. A., STRONGIN, A. YA. and STEPANOV, V. M., All-Union Scientific Research Institute of Genetics and Selection of Commercial Microorganisms, Moscow

[Abstract] The formation of multiple molecular forms is characteristic for a number of enzymes; however, the functional significance of this phenomenon and its genetic control have been little studied. The authors therefore undertook a study of the influence of mutations of bac. subtilis on the formation of multiple forms of the extracellular alkaline serine protease subtilisin. Several examples were used to show that the formation and relationship of multiple forms are significantly influenced by mutation of the producing bacterium, including mutations which do not directly affect the structural subtilisin gene. In 33 mutants studied, a total of 6

molecular forms of subtilisin were found. The number of forms of subtilisin found in each of the mutants studied was never over three. Three forms of subtilisin of mutants were similar to the corresponding forms of subtilisin of the initial strain, with m w 27,000-30,000. Three other forms were found only in mutants, not in the initial strain, and had lower m w (around 20,000). There is apparently one structural gene for subtilisin in the genome of bac. subtilis. The multiplicity of molecular forms of this protease may be a result of post-translation modification (limited proteolysis) of the initial type of subtilisin, occurring as it is secreted through periplasmatic area and cell membrane. It is probable that for many secreting proteins, certain mutations which do not involve the structural genes are capable of significantly influencing their expression, changing the degree of modification of product of these genes--the initial secretory proteins, and thereby also the relationship of their molecular forms. References 21: 7 Russian, 14 Western.

USSR

UDC 576.858.9:586.851.48

INTERACTION OF ISOLATED LAMBDA PHAGE DNA WITH SPHEROPLASTS OF E. COLI  
TREATED WITH STURINE

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian  
Vol 83, No 5, May 77 pp 597-599 manuscript received 18 Oct 76

MOISEYEVA, T. F., DITYATKIN, S. YA., SABEL'NIKOV, A. G. and IL'YASHENKO, B. N., Laboratory of Molecular Microbiology, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] An investigation was made of the interaction between isolated biologically active DNA of lambda phage and the membrane structures of E. coli spheroplasts treated and untreated with a basic protein--sturine. The biological activity of the DNA was determined from the number of infected spheroplasts. It was found that when spheroplasts are treated with sturine the adsorption of phage DNA approximately triples. About 50% of the phage DNA molecules absorbed by the spheroplasts are bound to the cytoplasmatic membrane of the sturine-treated spheroplasts, while about 50% of the DNA molecules are bound to the cell wall on the untreated spheroplasts. The resultant data show that the stimulating effect of sturine in transfection of E. coli spheroplasts with lambda phage DNA is due to redistribution of the phage DNA adsorbed on the spheroplasts from the cell wall to the cytoplasmatic membrane which facilitates the penetration of the incoming DNA and fastening to the membrane. Figures 2; references 7: 2 Russian, 5 Western.

USSR

UDC 615.216.5.015.23

COMPARATIVE CHARACTERISTICS OF CHINOLYTIN, GALANTHAMINE AND PROSERINE  
AS MYORELAXANT ANTAGONISTS

Moscow ANESTEZIOLOGIYA I REANIMATOLOGIYA in Russian No 4, Jul/Aug 77  
pp 32-37

KHMELEVSKIY, Ya. M. and GADOLOV, V. P., Institute of Medical Radiology,  
Academy of Medical Sciences USSR, Obninsk

[Abstract] A study was made of the effect of chinolytin, an anticholinesterase preparation synthesized at the Institute of Organic Synthesis, Academy of Sciences Latvian SSR, in comparison with known myorelaxant antagonists of the anticholinesterase group. The effect of the three substances was studied in 150 adult patients, most of whom (83%) underwent surgery for neoplasms in various organs. The studies were performed during operations on organs of the thorax (23), abdominal cavity (70), pelvis minor (45) and surgery to the extremities (12). The methodology of general anesthesia was the same in all cases. Total muscular relaxation was achieved with succinylcholine and tubocurarine. The myorelaxant antagonists were administered at the end of the operation and narcosis. Most patients exhibited independent but insufficient respiration. It was found that a dose of 0.05 mg/kg of chinolytin is equivalent in myorelaxant antagonist effect to 0.4 mg/kg galanthamine. Neither is as strong as 0.03 mg/kg proserine. However, proserine is more cardiotoxic. References 4: 2 Russian, 2 Western.

USSR

UDC 615.285.7.032.77 047)

REPELLENT PREPARATIONS INTENDED FOR SKIN APPLICATION: A SURVEY OF THE  
MEDICAL LITERATURE

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical  
Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 99-108  
manuscript received 29 May 75

STAVROVSKAYA, V. I., DREMOVA, V. O. and KHARITONOVA, S. I.; Institute of  
Medical Parasitology and Tropical Medicine imeni Ye. I. Martynovskiy,  
Ministry of Health USSR; and All-Union Scientific-Research Institute of  
Disinfection and Sterilization, Ministry of Health USSR, Moscow

[Abstract] With the widespread introduction of insect repellents, a large  
amount of research has been conducted in connection with convenience of  
application to the human body, hygienic considerations, effectiveness

and duration of the repellent effect, and other important factors. Soviet research in this field, extending back to 1939, is represented largely by work listed. Liquid Repellent Preparations: YE. KACHALOVA, et al. (1939) and S. YE. GLEYBERMAN and T. M. VORONKINA (1972) (work on alcohol solutions of DETA [diethyl toluamide]); V. P. DREMOV, et al. (same); P. S. BATAYEV, et al. (use of DMP [dimethyl phthalate] to increase the duration of the repellent effect); S. YE. GLEYBERMAN (1974; discovery that DMP increases the toxicity of toluylpyrerydylamide solutions); P. S. BATAYEV, et al. (1963; use of benzoylpyrerydine in perfume oil); S. G. GLADKIKH, A. V. MASLOVA, A. F. SHAMRAYA, A. S. LUTTA (1953-1961; discovery that glycerine and vaseline emulsions of DMP are superior in length of action to both the alcohol solution and pure DMP); YE. I. POKROVSKAYA, et al. (1961; demonstrated high efficiency of glycerin emulsions of the R-162 and R-203 preparations); V. V. ALMAZOVA, et al. (1961), L. V. IVANOV and V. I. STAVROVSKAYA (1966), I. G. KAMORZINA et al. (1969), and V. I. VASHKOV et al. (1970) (work on lengthening the repellent action of lotions, with use of films and silicones); V. V. MARKINA et al. (1971, 1974), and S. YE. GLEYBERMAN and T. M. VORONKINA (1972) (study of the effect of adding cellulose derivatives to lotions and creams); I. G. KAMORZINA and K. S. KNYAZEVA (1965), L. V. IVANOVA and STAVROVSKAYA (1966) and I. V. KOSHKINA and S. I. KHARITONOVA (1970) (the same, with attention to retarding effects of ethyl cellulose); A. A. POTANOV et al (1975; further study of ethyl cellulose); A. SHVARTS et al (1960; study of surface-active substances); K. P. ANDREYEV and I. A. ZAKAMYRDIN (1961), B. A. LUGOVNIK and T. I. BRATANOVA (1962) and N. P. MEZENEV (1966) (study of insect repellents for use with animals). Aerosols: M. L. FEDDER, V. M., TSETLIN et al (1964; development of spray cans for use with DETA; this work was continued by V. P. DREMOV et al (1967, 1963), V. M. TSETLIN et al (1968), and S. N. SMIRNOV, et al. (1970), in connection with various other preparations). "Soft" Forms of Insect Repellents: In this category are included pastes, greases and creams, including, in addition to a variety of active elements, various stabilizers, distributors, skin protectors, oils, waxes, and the like. Outstanding workers in this field have been M. L. FEDDER (1959), S. G. GLADKIKH (1964), YE. N. PAVLOVSKIY (1956), I. G. KAMORZINA and K. S. KNYAZEVA (1965), and V. V. MARKINA (1973). DMP has been prominently used in these preparations. Solid Insect Repellents (Pencils, Cakes, Soaps, Dusts): Outstanding research in this area of repellents has been conducted by YE. N. PAVLOVSKIY, et al. (1956), V. K. NIZOVKINA, et al. (1957, 1959), S. G. GLADKIKH (1964), G. S. PERVOMAYSKIY, A. K. SHUSTROV (1963, 1967), and L. YE. VASIL'YEVA, et al. (1972). The recommended active ingredients have been diphenyl oxide, indalon, DMP, DETA, benzimine, carboxide. Mixtures of Repellents: Mixtures of repellents containing two or more active ingredients offer a distinct advance in insect control. The immediate aims of research in this area are control of various species of insects, anti-insect action at a great distance, and long duration of action. V. A. KONDRAT'YEV (1963), A. K. KRYLOV and E. V. SAZONOVA (1964), A. P. VOLKOVA, et al. (1970), V. S. DEDOV (1970, 1973), S. YE. GLEYBERMAN and A. O. VOLKOV (1971), V. V. MARKINA, et al (1970, 1971) and T. M. VORONKINA, et al. (1972). Other Research: G. I. KONDRATENKO and A. I. KURINN (1973) have studied the

cytotoxic effects of DETA, DMP, R-203, carboxide, benzimin and P-203 - DETA mixtures. At the present time Soviet industry is producing several repellent lotions: "Tayga", "Artek" and "Angara", on a DMP base; "DETA" on the base of the same name; and "DETA-1" containing a mixture of DETA, benzoylpyredin and other active ingredients. Creams are produced under the trade names "DETA", "Geolog", "Redet", "Tayga", "Direpellin", "Tabu-B", and others. References: about 100, mainly Russian.

USSR

UDC 615.283.926:547.831

SYNTHESIS OF BENZO(g)QUINOLINE. XIII. NEW DERIVATIVES OF BENZO(g)QUINOLINE WITH ANTIMALARIAL PROPERTIES

Moscow MEDITSINSKAYA, PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI [Medical Parasitology and Parasitic Diseases] in Russian No 1, 1977 pp 71-72  
manuscript received 11 May 76

BEKHLI, A. F., KOZYREVA, N. P., MOSHKOVSKIY, SH. D., RABINOVICH, S. A., MAKSAKOVSKAYA, YE. V., GLADKIKH, V. F., LEBEDEVA, M. N., LYCHKO, N. D. and SOPRUNOVA, N. YA.; Institute of Medical Parasitology and Tropical Medicine imeni Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] The authors previously synthesized and studied several 4-amino-substituted benzo(g)quinolines, and among these the ones having aromatic substitutes showed antimalarial activity of about the same quality as that of chloroquine, a basic antimalarial preparation. That research was continued during 1969 and later in 1975. Derivatives of 4-aminobenzo(g)quinoline with aliphatic side chains were synthesized, using the authors' previous method. The compounds were isolated in the form of bases and their salts (diphosphates). The bases were crystalline, yellow substances, readily soluble in most organic solvents but not in water; the diphosphates showed solubilities the reverse of these. All of the substances were tested for action against *Plasmodium berghei berghei* and *P. gallinaceum*, using baby chicks as subjects. A direct relationship was found between antimalarial effectiveness and the shortness of the side chain. This indicates that the mechanism of antimalarial action of the 4-amino-benzo(g)quinolines is quite different from that of the 4-aminoquinolines, and requires further research. The best of the group of four (G-800, or dabequine) offers superior tolerance and longer action within the organism. References 5: 3 Russian, 2 Western.



USSR

UDC 615.277.3:576.893.1.098.329.5

ANTINEOPLASTIC ACTIVITY OF FATTY ACID DERIVATIVES ISOLATED FROM PROTOZOA

Moscow ANTIBIOTIKI in Russian No 8, 1977 pp 727-733 manuscript received 24 Feb 77

SUKHAREVA-NEMAKOVA, N. N., TERENT'YEVA, T. G., URINYUK, V. M., SILAYEV, A. B. and NAVASHIN, S. M., Moscow State University and All-Union Scientific Institute of Antibiotics

[Abstract] Study of the antineoplastic activity of fatty acid derivatives isolated from the protozoans *Trypanosoma lewisi* and *Astasia long* showed them to be effective against such transplantable mouse and rat tumors as carcinoma 755, Lewis Long carcinoma, sarcoma 45, sarcoma 37, and sarcoma 180 (rat sarcoma 45 and mouse sarcoma 180 were particularly sensitive to the preparations). However, they were inactive against such leukemias as L-1210 and P-388, Fisher's lymphadenosis, and L10-1 lymphosarcoma. The optimum doses ranged from 10 to 40 mg/kg and they were in general, most effective when injected intraperitoneally every day for 8 to 14 days. References 68: 29 Russian, 39 Western.

USSR

UDC. 613.6.612.843.7):681.31

BIOCYBERNETIC CHARACTERISTICS OF CHANGES IN BODILY CONDITION DURING WORK INVOLVING PERCEPTION OF VISUAL INFORMATION

Moscow GIGIYENA I SANITARIYA in Russian No 7, Jul 77 pp 45-49 manuscript received 19 Aug 76

GUMENER, P. I., professor, and GLUSHKOVA, YE. K., and VEREMKOVICH, L. V., candidates of medical sciences, Institute of Hygiene of Children and Adolescents, Ministry of Health USSR, Moscow

[Abstract] A new approach to analysis of bodily physiological functions during visual work is described. Characterization of the regulation of physiological parameters during this work employed calculation of correlated functions of movements of the eyes, using electrooculograms, (EOG), skin-galvanic reaction, (SGR), frequency of cardiac contractions, (FCC), and inter-correlated functions (signal-EOG; signal-SGR; EOG-SGR). The work situation modelled conditions of use of technical and audiovisual devices in a school teaching process: following a light signal (i.e., perception of information from a classroom display screen), whereby the quality of the work reflected the quality of the signal, and subject facility in following the light. Information about the bodily regulation of eye movements, and of vegetative functions while a subject is directly participating in the work process helped to make a more accurate evaluation of the condition of the body (under a different direction of the visual analyzer and a different duration of work) than information on the average condition of these indices. Indices of bodily tension during visual work requires individual analysis of the features of regulation of physiological functions while engaged in an activity involving technical teaching aids with different characteristics. Data on the qualitative condition of a human body, collected during the work process, can be used for management of the technical teaching aids, a control which would assure optimal bodily conditions. Such use could help to develop hygienic standards for this type of work. Tables 2; References: 8 Russian.

USSR

UDC 591.41.42.577.3

QUANTITATIVE EVALUATION OF BIORHYTHMS

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 30, No 5, May 77  
pp 31-35 manuscript received 16 Feb 77

MATINYAN, L. A., ISAAKYAN, S. M. and MATINYAN, M. L., Institute of Physiology  
imeni L. A. Orbeli, Academy of Sciences Armenian SSR, Armniprotsvetmet  
[expansion not known]

[Abstract] Using a method that they had developed previously for calculating the frequency of electric discharge of a nerve cell, the authors calculate the biorhythms of the human heart and lungs, as well as the relative evaluation of the periods of functioning of men and animals. It is shown that the theory of capillary oscillations of spheroids in a viscous medium can be applied to determination of the biorhythm of a nerve cell, and also the rhythm of individual organs and of the body as a whole. The proposed technique could be used to diagnose the pathology of an organ from the nature of deviation of the biorhythm from the norm. It should be possible to restore the natural rhythm and hence the normal function of an organ by applying vibrations with frequency corresponding to the norm. References 9.

USSR

UDC 612.821.7+612.822.1

EFFECTS OF SLEEP DISTURBANCES ON RIBONUCLEASE IN VARIOUS REGIONS OF THE RAT BRAIN

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IM. I. M. SECHENOVA in Russian No 8, 1977 pp 1073-1078 manuscript received 18 Mar 77

DEMIN, N. N., NECHAYEVA, G. A. and SHELEPINA, YE. P., Functional Neurochemistry Laboratory, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] Studies were conducted on the effects of lack of sleep or deprivation of REM sleep on the release of certain lysosome-bound hydrolytic enzymes in the cerebral cortex (CC) and brain stem (BS) of 180 g Wistar rats of both sexes. Analysis of the resultant data demonstrated that total lack of sleep or deprivation of REM sleep for 6 to 96 hr was without statistically significant effect on the level of bound or free acid RNase or cathepsin D in the case of the 0.25M sucrose lysosome-enriched fraction from the BS. Further, the activities of soluble alkaline RNase or of the natural protein inhibitor of alkaline RNase also remained unaltered vis-a-vis control data in both the CC and the BS. However, deprivation of the animals of REM sleep for 6 or 48 h resulted in marked release of lysosomal

acid RNase (13 and 43%, respectively) in comparison with control observations (less than 5%) in the CC, with cathepsin D remaining unaffected. The labile acid RNase fraction appears to correspond to that released from lysosomes under the influence of histones. Figures 3; references 16: 2 Ukrainian, 9 Russian, 5 Western.

USSR

UDC 616.126.52-091-092-9

MORPHOFUNCTIONAL CHARACTERISTIC OF PACEMAKER FORMATIONS SITUATED IN THE ATRIOVENTRICULAR HEART VALVES

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 83, No 5, May 77 pp 600-604 manuscript received 15 Jul 76

BESKROVNOVA, N. N., KOROLEV, V. V., doctor of medical sciences, Chief of the Laboratory of Electron Microscopy Affiliated with the Central Scientific Research Laboratory of the First Moscow Medical Institute imeni I. M. Sechenov, KOSHARSKAYA, I. L., MAKARYCHEV, V. A. and UL'YANOVSKIY, L. S., doctor of medical sciences, Chief of the Laboratory of Experimental Cardiology, Institute of Normal Physiology imeni P. K. Anokhin, Academy of Medical Sciences USSR

[Abstract] The authors of this paper are the first to detect and describe a multicellular morphofunctional complex responsible for the generation of spontaneous pacemaker activity in the atrioventricular valves of a rabbit heart. The electrophysiological characteristics of the pacemaker cells were studied on 100 atrioventricular valve preparations: the frequency of arising of spontaneous potentials of action, their shape, the magnitude of the overshoot potential, and the levels of critical and maximum diastolic potentials. Electron microscope studies were done on 30 valve sections in which the pacemaker activity was electrophysiologically determined. Cells of different morphological structure were differentiated: P-cells, Purkinje type cells and transition cells. It is demonstrated that these formations are richly innervated, the innervation being chiefly cholinergic. A certain correlation is established between the morphological structure and the electrophysiological indices of these cells. Figures 3; references 14: 4 Russian, 10 Western.

USSR

UDC 591.1+12

INFLUENCE OF VAGUS AFFERENTATION UPON THE RESPIRATORY CENTER DURING  
HYPERVENTILATION

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1977 pp 71-76 manuscript  
received 27 May 76

YEFIMOV, V. N. and CHUMACHENKO, A. A., Scientific Research Institute of  
Neurocybernetics, Rostov State University

[Abstract] In an investigation of chemo- and mechanoreceptors and their influence upon conditions of the generation of the respiratory rhythm, experiments with the use of artificial respiration on anesthetized, immobilized rabbits recorded activity of the diaphragmal nerve. Hyperventilation, electrostimulation, electrical blocking, and vagus section were used as experimental procedures which change the afferentation inflow to the respiratory center. An assumption of the presence of a neuron integrator in the respiratory regulator mechanism was made on the basis of the obtained results. Vagal afferentation is integrated with hemosensitive afferentation, but with an opposite sign with respect to the latter, and exerts an inhibitory effect upon the work intensity of the respiratory generator. Figures 3; references 9: 4 Russian, 5 Western.

USSR

UDC 616.13-02:612.014.47]-092.9

EFFECTS OF GRAVITATIONAL OVERLOADINGS (+G<sub>x</sub>) OF A TRAINING NATURE UPON  
THE STRUCTURE OF THE MAIN ARTERIES IN DOGS

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 5, 1977  
pp 97-104 manuscript received 7 Oct 76

PRIVES, M. G., KOSOUROV, A. K., STEPANTSOV, V. I., KIBLYAKOV, A. V., and  
PROKOPOVICH, N. B., Department of Normal Anatomy (Chief, Prof. M.G. Prives)  
and Department of Normal Physiology (Chief, Prof. A. V. Kibyakov, Corres-  
ponding Member, Academy of Medical Sciences USSR) of the First Leningrad  
Order of Labor's Red Banner Medical Institute imeni Academician  
I. P. Pavlov

[Abstract] With the aim of studying the influence of positive transverse overloads of a training nature upon the structure of the main arteries, the wall structure of the main arteries among dogs subjected to the action of gravitational overloadings (+G<sub>x</sub>) was studied by histological methods. The state of the sympathoadrenal system was estimated on the basis of the quantity of catecholamines (adrenalin and nonadrenalin) in the venous blood plasma and in the adrenal tissue. It is shown that the threshold tolerance to continuously increasing overloadings (+G<sub>x</sub>) rises among trained animals

with an accompanying rise in the content of catecholamines in the blood and in the adrenals. The obtained data demonstrate adaptational changes which can be interpreted as indices of training and reliability of the body. Figures 3; references 11: 9 Russian, 2 Western.

USSR

UDC 621.135-06:612.275.1

INFLUENCE THAT ADAPTATION TO HIGH-ALTITUDE HYPOXIA HAS ON MICROCIRCULATION IN THE MESENTERY OF RATS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 83, No 5, May 77 pp 528-530 manuscript received 23 Nov 76

SHTYKHNO, YU. M. and TITOVA, I. P., Laboratory of Pathophysiology of Extreme States, Institute of General Pathology and Pathophysiology, Academy of Medical Sciences USSR, Moscow

[Abstract] An in vivo study was done on the state of the peripheral blood circulation, and, in particular, microcirculation, after prolonged exposure of rats to an atmosphere with low oxygen concentration. Half the 20 experimental animals were placed in a barochamber (6500 m altitude) for six hours a day for a period of  $35 \pm 5$  days, and the other ten animals served as the control group. Microcirculation in the mesentery of the small intestine was studied on an MBI-6 microscope. Considerable hyperemia of the intestinal wall and mesentery was observed. The number of functioning capillaries in the experimental animals was several times greater than that in the control animals, but the blood flow in the expanded microvessels was slowed down, and the flow structure was disrupted. In addition to obvious thickening of the blood in arteries and veins, thinning in the capillary vessels was also observed. Definite hemorheological shifts were observed that are apparently associated with polycythemia and with an increase in the hematocrit value. Figures 2; references 9: 4 Russian, 5 Western.

INFLUENCE THAT ADAPTATION TO HIGH-ALTITUDE HYPOXIA AND SUBSEQUENT  
DEADAPTATION HAVE ON RETENTION OF A CONDITIONED REFLEX

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 83,  
No 5, May 77 pp 526-527 manuscript received 12 Nov 76

MEYERSON, F. Z., SOLOMATINA, YE. S. and IL'IN, YE. A., Laboratory of Heart  
Pathophysiology, Institute of General Pathology and Pathophysiology,  
Academy of Medical Sciences USSR, Moscow

[Abstract] Previous experiments have demonstrated that adaptation to high-altitude hypoxia activates synthesis of RNA and protein in the neurons and glial cells of the cortex and lower divisions of the brain. This shift is accompanied by an increase in the rate of fixation and degree of retention of conditioned reflexes, supporting the hypothesis that nucleic acids and proteins play a decisive role in consolidation of memory. During deadaptation of animals to hypoxia, synthesis of protein in the brain drops sharply, and within six days is on the level of the control group. To check out the hypothesis of the relation between activation of protein synthesis and conditioned reflex behavior, the authors study the influence that adaptation to hypoxia has on the development and retention of a conditioned reflex and investigate the dynamics of the disappearance of the acquired reflex during deadaptation. The experiments were done on rats placed in a barochamber at pressure corresponding to 5500 m of altitude for 5 hours. The hypoxic stimulus was continued for 40 days. A reflex of shock evasion was conditioned in a Y-shaped maze where the safe path was illuminated. The rats were assumed conditioned when they made 4 correct runs out of 5. Retention was verified after 24 hours. A slight acceleration of reflex acquisition was observed in all cases after adaptation to hypoxia. The main differences between the preadapted and control animals showed in checking retention after 24 hours. The differences disappeared within about the same time period as deactivation of synthesis of RNA and protein in the brain, thus confirming the hypothesis. References 8: 7 Russian, 1 Western.

USSR

UDC 591.481.8

COLLISION OF IMPULSES AS A METHOD OF STUDYING A COMMON PATH OF THEIR  
PROPAGATION IN THE NEURON

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1977 pp 127-137 manuscript  
received 7 Mar 76

VORONKOV, G. S., Department of Physiology of Higher Nervous Activity,  
Moscow State University imeni M. V. Lomonosov

[Abstract] When impulses propagate regeneratively toward each other along a common path in a neuron, they mutually extinguished each other and the duration of their possible mutual blocking depends upon the length of the section on which the impulses are colliding. Thus, the duration of the blocking carries information concerning the section of the mutual path of the propagation of two impulses of different origin. A description of some theoretically representable patterns of the mutual blocking of counterwise-propagating impulses, during a different position of the diverting electrode with respect to 2 action-potential sources in a common path, is presented. Figures 6; references 13: 5 Russian, 8 Western.

USSR

UDC 611.81-08:612.273.2

SOME DATA ON THE EFFECT OF ACUTE AND CHRONIC HYPOXIA UPON THE STRUCTURE  
OF NERVE ELEMENTS OF THE BRAIN

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 5,  
1977 pp 77-83 manuscript received 22 May 75

KOLESOV, M. A., Department of Normal Anatomy, and Central Scientific  
Research Laboratory, Grodno State Medical Institute

[Abstract] With the aim of studying changes of the nervous tissue of the brain among animals subjected to the action of acute hypoxia under various conditions with respect to altitude and duration, and studying these brain structures in the process of gradual training for increasing high-altitude hypoxia, it has been found that a considerable difference exists between data obtained on rats trained for hypoxia and data obtained on rats after a single ascent to an altitude of 10,000 m. Among rats which have undergone adaptation to hypoxia, dystrophic and destructive neuron changes are less frequently encountered, the neuron cytoplasm in all sections of the brain is rich in Nissl substance, and the dimensions of the neuron themselves are increased. Many neurons of the cortex possess characteristics indicating an elevated functional activity of the nucleus and the nucleolus. Figures 4; references 24: 19 Russian, 5 Western.



USSR

UDC 616.453-007.6-02:616-001.17

THICKENING OF THE ADRENAL CORTEX DURING ACUTE THERMAL STRESS

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 5, 1977 pp 73-77 manuscript received 1 Jun 76

PUGACHEV, M. K., Department of Histology, Embryology and Cytology, Smolensk Medical Institute

[Abstract] In an experiment conducted on albino rats, it was established that the vascular reaction of the adrenal cortex of the animals subjected to thermal stress, and the consequent thickening of the adrenal cortex, takes place due to a blood-congestion increase rather than due to true hypertrophy. Figures 1; references: 19 Russian.

USSR

UDC 611.813.11-083-08:[599.824+569.9

COMPARISON OF FORMATION OF THE FRONTAL-AREA FIELDS IN THE PRENATAL LIFE PERIOD OF THE MACAQUE (MACACUS RHESUS, S. MACACA MULATTA) AND MAN

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 5, 1977 pp 32-38 manuscript received 2 Aug 76

ORZHEKHOVSKAYA, N. S., Architectonics Laboratory, Brain Institute, Academy of Medical Sciences USSR, Moscow

[Abstract] In an investigation constituting part of a project on ascertaining the patterns governing the development of some frontal-area fields in various ages of the prenatal period among lower monkeys, fields 8, 9, 10, 11, 12 and 47 were studied cytomyeloarchitectonically and morphometrically in the macacusrhesus and man. General patterns governing the development of these fields were ascertained for the two species, as well as essential differences manifested in the maturation rates of the studied fields (this process taking place more slowly in man), and in complication of the organization of the human brain area. Figures 2; references: 6 Russian.

## INFLUENCE OF ADAPTATION TO HIGH-ALTITUDE HYPOXIA UPON THE STRENGTH OF RESISTIVE VESSELS

Moscow KARDIOLOGIYA in Russian No 5, 1977 pp 83-87 manuscript received 1 Aug 76

MEYERSON, F. Z. and SALTYSKOVA, V. A., Laboratory of Cardiac Pathophysiology (Chief, Prof. F. Z. Meyerson), Institute of General Pathophysiology, Academy of Medical Sciences USSR, Moscow

[Abstract] In a study of the influence of mid-altitude conditions, i.e., 2100 m, upon the tone of the resistive vessels of the posterior extremities of animals, the resistance of vessels in the hind limbs was determined under controlled perfusion in rats adapted to hypoxia at an altitude of 2100 m and in control animals at 200 m above sea level. It was found that 15 days after the onset of adaptation the strength of the resistive vessels decreases, after 30 days the degree of this resistance-decrease grows and it becomes statistically significant. The decrease of resistance in the resistive vessels of adapted animals persists after denervation of the extremity and depends upon reduction of the myogenic vascular-tonicity component. This component reduction is accompanied by a reduction of the pressor reactions to asphyxia and the addition of noradrenaline to the perfusate. The obtained data indicate that preliminary adaptation retards the development of experimentally induced hypertension. Figures 3; references 10: 8 Russian, 2 Western.

USSR

UDC 631.523:633.11

INHERITANCE OF STEM RUST RESISTANCE BY WHEAT HYBRIDS DURING RECURRENT INTERBREEDING

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1977 pp 109-113 manuscript received 16 Jul 76

SMIRNOVA, L. A., KUZNETSOVA, Ye. V., and ANDREYCHENKO, L. M., North-Caucasian Scientific Research Institute of Phytopathology

[Abstract] When continuous selection is conducted on the basis of the criterion of resistance to stem rust in back-crossed progenies, a definite nature of the division is ascertained. After the first 3-4 back crossings, the correct relationships of the resistant and susceptible forms, corresponding to the division formula of 1R:1S, is ascertained during the transmission of one dominant resistance gene. When the criterion of resistance to rust, controlled by one recessive resistance gene, is transmitted, these relationships more frequently correspond to the formula 1R:3S. In an experiment initiated in 1969 at the North Caucasian Scientific Research Institute of Phytopathology, it was established that these resistance factors, present in the winter wheat varieties Rannyaya 12, Bezostaya 1, and Skorospelka 35 may be successfully transmitted to another susceptible wheat variety. However, these factors are not equivalent with respect to effectiveness. References 6: 1 Russian, 5 Western.

USSR

INFORMATION CONCERNING TUBERCULOSIS PATIENTS UNDER CONDITIONS OF GROUP  
AND NO-EXCEPTION FLUOROGRAPHIC EXAMINATIONS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77 pp 42-43

GILAYEV, M. G., CHAYKA, V. S., DOSMUKHAMBETOV, YE. KH., head physician,  
Dengizskaya Rayon Hospital, Gur'yevskaya Oblast

[Abstract] The authors' study was done in the title rayon in 1974 where they carried out fluorography of the population, without exception, of the Primorskaya and Azgirskaia zones which are semi-desert areas. The examination revealed that previous group examinations did not assure timely or complete identification of tuberculosis patients. The mass examination was therefore needed. Identification of tuberculosis among the so-called "unorganized" sectors of the population, i.e., the pensioners and home-bodies, is vital since no liquidation of the disease is possible while this group remains a risk.

USSR

ORGANIZATION OF FLUOROGRAPHIC EXAMINATION OF THE POPULATION

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 5, May 77 pp 37-39

ZHUKOV, V. K. and MYRTYNENKO, G. B., physicians, Shemonaykhinskaya  
Central Rayon Hospital of East Kazakhstanskaya Oblast

[Abstract] Shemonaykhinskaya Rayon has 65,000 residents: Fluorography was carried out in the polyclinic of the title hospital, with a wide-screen instrument (II-F-I); residents of workers colonies and villages were examined, once every two years, with the Chepel' mobile fluorograph (fitted with extra heating because of the severe climate; hence the mobile unit could be used practically all year). The mobile unit worked morning and night to fit field working hours; the polyclinic hours were normal. In 1973 and 1975 the Kazakh Scientific Research Institute of Tuberculosis set up a card file on residents older than 12 years of age. In 1973, 87.5% of the residents in the rayon center were examined; in 1974, 84.3%; in 1975, 90.5%. Not examined in the 3 years were 1289 people (7.9%). The card index permitted accurate count of persons with residual manifestation of tuberculosis. In 1975 this figure was 733 (1.7% of all examined). The authors stress the need for establishing a special file and separation of groups with increased risk of disease. Storage of films on rolls on appropriate shelvings is recommended for retrieval of old films for retrospective analysis.

USSR

UDC 575.591

INVESTIGATION OF SOME APPROACHES TO ORGANIZATION OF GENETIC MONITORING  
IN ARMENIA. II. STRUCTURE OF MARRIAGES AND INBREEDING OF THE POPULATION OF  
THE ARMENIAN SSR

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 30, No 5, May 77  
pp 36-40 manuscript received 14 Mar 77

KULESHOV, N. P., OKOYEV, G. G. and YEOLYAN, E. S., Scientific Research  
Institute of Obstetrics and Gynecology, Ministry of Health, Armenian SSR,  
and Institute of Medical Genetics, Academy of Medical Sciences USSR

[Abstract] From questionnaires given to 40,000 women just after delivery  
in maternity hospitals, the marriage structure of Armenia is analyzed.  
Most marriages are intranational, and the specific weight of cousin mar-  
riages is 0.6%. The coefficients of inbreeding among Armenia, Azerbayd-  
zhani and Kurdish nationalities are 0.00007, 0.00532 and 0.00323 respec-  
tively, the figure for the republic as a whole being 0.00022. The per-  
centage of stillbirths, miscarriages, infant mortality and birth defects  
were all considerably higher in cases where the parents were related than  
when they were unrelated, indicating a higher concentration of recessive  
lethal and sublethal mutations where cousin marriages predominate.  
References 8: 2 Russian, 6 Western.

USSR

UDC 616.127-005.8-053.7

MYOCARDIAL INFARCTION AMONG YOUNG PATIENTS

Moscow KARDIOLOGIYA in Russian No 5, 1977 pp 91-95 manuscript received  
27 May 76

KAZ'MINA, P. V., NIKOFOROVA, A. N., SOLOV'YEV, V. V. and GALOCHKINA, N. G.  
Department of Hospital Therapy No. 1 of the Therapeutic Faculty of the  
Second Moscow Medical Institute imeni N. I. Pirogov; the Fourth Main  
Administration of the Ministry of Health USSR, Moscow

[Abstract] In an attempt to ascertain the relationship of the morbidity  
and the complication severity from the presence of ischemic heart-disease  
risk factors, 106 myocardial infarction patients up to 40 years of age  
were studied, and features of the course of the disease among young persons  
were also studied. It was established that males predominated among the  
patients (90.5%), with the prevalence of macrofocal and transmural myocar-  
dial infarctions. Risk factors of ischemic heart disease were found among  
88 patients (83%): arterial hypertension, hypercholesterolemia, heavy  
smoking, excessive weight, a sedentary life. The severity of the course of

myocardial infarction is directly related to the presence of risk factors in the patient. Studies of the immunoglobulin content in 15 patients revealed an immunologic hyperreactivity among young patients with myocardial infarction when they developed complications. Autopsy data of 5 mortality cases demonstrated atherosclerotic lesions of the coronary arteries in all of them. References: 9 Russian.

USSR/BULGARIA

UDC 611.811-08:612.014.481

ADAPTIVE COMPENSATORY BRAIN RESPONSE TO IRRADIATION

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 5, 1977  
pp 20-26 manuscript received 8 Sep 75

MANINA, A. A., KUCHERENKO, R. P., KHADZHIOLOV, A. I., ZAPRYANOVA, E.,  
BOYADZHIYEVA-MIKHAYLOVA, A. and BAKALSKA-NESHEVA, M., Cytology Laboratory  
(Chief, Prof. A. A. Manina), Institute of Experimental Medicine, Academy  
of Medical Sciences USSR, Leningrad, and Morphology Laboratory (Chief,  
Academician A. I. Khadzhiov) Morphology Institute, Bulgarian Academy  
of Sciences, Sofia

[Abstract] In an investigation of the structural-functional activity of  
subcellular reparative processes in the cerebral cortex during total irradi-  
ation of hen and rat embryos, as well as of young chicks and rats, it is  
shown that the adaptive compensatory response is characterized by sub-  
cellular changes and organelle hypertrophy of the neurons in the CNS,  
accompanied by disturbance of metabolic and synthetic processes. Regener-  
ation of the ultrastructures proceeds simultaneously with their destructive  
processes. Figures 4; references 28: 17 Russian, 1 Bulgarian, 10 Western.

USSR

UDC 617-001.28-036.11-092:612.591.1

RESISTANCE TO HYPERTHERMIA DURING ACUTE RADIATION SICKNESS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8,  
1977 pp 162-164 manuscript received 11 Feb 77

MOLOTKOV, O. V. and KOZLOV, N. B., Department of Pathophysiology and  
Biochemistry, Smolensk Medical Institute

[Abstract] Mortality rates were determined for control and irradiated  
(800 r) outbred albino male rats following hyperthermia (45° chamber; 30%  
relative humidity). The mortality rate was found to be higher for irradi-  
ated rats during the first three hours after irradiation; 3 days after  
irradiation the experimental rats were somewhat more resistant than the  
control animals to the effects of a heat stroke, while at the height of  
radiation sickness (5th day) both groups evidenced equal susceptibility to  
hyperthermia. Greatest susceptibility of the irradiated animals to the  
negative effects of hyperthermia was correlated with high levels of corti-  
costerone and thyroid hormones in the blood during the immediate post-  
irradiation period. References: 6 Russian.

## CONCERNING CHANGES IN THE COURSE OF REPARATIVE OSTEOGENESIS UNDER THE INFLUENCE OF PULSED ELECTRIC CURRENT

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 83, No 5, May 77 pp 589-591 manuscript received 24 Sep 76

LANDA, V. A., POLYAKOV, A. N. and BARANOV, V. K., Biophysics Laboratory, Central Scientific Research Institute of Traumatology and Orthopedics imeni N. N. Priorov, Ministry of Health USSR, Moscow

[Abstract] A study was done to determine the nature of the stimulating effect that pulsed electric current has on reparative regeneration of bone tissue based on histological and microscopic radiographic data. A piece of bone 0.5 cm long was resected from the middle of the diaphysis of the radius of a rabbit. The stimulating current was fed to the bone through platinum electrodes five times a week for a three-week period. The duration of the pulses was 1 s and the space between pulses was 4 s. It was found that the optimum amplitude was from 6 to 15  $\mu$ A. During the first week the experimental and control groups showed similar reparation. After two weeks, the wounds of the experimental group were half filled with spongy bone tissue. The newly formed bone was made up of beams of fibrous bone tissue carrying deposits of platelet bone. The rest of the wound was filled mainly with transparent cartilage on which the formation of bone tissue could be noted. In the control group, newly formed bone tissue filled about 1/3 of the wound at the end of the second week, and the rest was filled mainly with fibrous and cartilagenous tissue, and with fibro-cellular osteogenic tissue near the newly formed bone. By the end of three weeks the wound in the experimental group was filled with spongy bone tissue, while the control group showed wounds only half filled with newly formed bone. The mineralization of microstructures was the same for both groups. The results show that electric stimulation increases osteogenesis as compared with fibrogenesis and chondrogenesis. References 12: 5 Russian, 7 Western.



USSR

UDC 615.835.14.015.45:612.11/.12

INFLUENCE OF ACUTE DOSED HYPOXIA ON THE COAGULATING AND ANTICOAGULATING SYSTEMS AND CERTAIN BIOCHEMICAL INDICATORS IN THE BLOOD

Moscow ANESTEZIOLOGIYA I REANIMATOLOGIYA in Russian No 4, Jul/Aug 77 pp pp 72-75

STUDNICHKO, V. A. and CHIZHOV, A. YA., Anesthesiology Department, Hospital No 1, 4th Main Administration of the Ministry of Health RSFSR, Moscow

[Abstract] In 1972, a mixture of 10% oxygen and 90% nitrogen was recommended for use in oncologic practice for selective protection of the healthy tissues of a patient undergoing massive doses of ionizing radiation for neoplasms. Therefore, the question of the influence of dosed hypoxia on the various functional parameters of the human body is of importance in relationship to the use of hypoxic mixtures in presurgical radiation therapy of tumors. Dosed hypoxia can also be used as a test to determine the reserves of compensation in patients before surgery and narcosis. A study was performed on 21 volunteers, 23-60 years of age. All of the subjects were practically healthy. Dosed hypoxia was created by inhalation of a mixture of 10% oxygen and 90% nitrogen. The status of the coagulant and anticoagulant systems of the blood was determined by a thromboelastogram and coagulogram. The coagulogram was used to determine the prothrombin index in the blood plasma, the tolerance of the plasma for heparin, free blood heparin, the concentration of fibrinogen in the plasma, the concentration of fibrinogen B, fibrinase activity, blood fibrinolytic activity, coagulation and thrombocyte count. Analysis of the results showed that reliable changes occurred only during the reaction time corresponding to the phases of thromboplastin and thrombin formation, which stopped on the average at 11.8% of the initial level. This indicates a tendency toward hyperthromboplastinemia and correlates with the increased quantity of thrombocytes found. Breathing of the mixture by healthy persons for 60 minutes caused no reliable changes in most of the indicators of the thromboelastogram. References 16: 13 Russian, 3 Western.

USSR

UDC 616-006.6-085.355:577.152.34.042.2

APPLICATION OF PROTEASE INHIBITORS IN CARCINOGENIC INTOXICATION

Moscow KHIRURGIYA in Russian No 6, 1977 pp 110-111

ZOLOTUKHIN, N. A., candidate of medical sciences, REVIN, A. N. (Moscow)

[Abstract] It is shown that generalized forms of cancer of gastrointestinal tract organs proceed with an elevated proteolytic activity of the blood. An investigation dealing with 15 patients showed that the

application of proteolysis inhibitors to cancer patients decreases proteolytic activity, and creates conditions more favorable for the conduct of detoxification measures. References 5: 1 Russian, 2 Polish, 2 Western.

USSR

UDC 617-001.17-036.1:613.12(23)

#### DISTINCTIVE FEATURES OF BURN DISEASE UNDER HIGH-ALTITUDE CONDITIONS

Moscow KHIRURGIYA in Russian No 6, 1977 pp 52-56

NERSESYAN, A. A., candidate of medical sciences, Bardenisskaya Rayon Hospital, Armenian SSR

[Abstract] Burn disease proceeds considerably more severely under high-altitude conditions than in valleys, and is characterized by the rapid development of severe burn shock. In an analysis of the treatment of 136 patients with burn disease under high-altitude conditions, the severe course of the disease is attributable to the constantly stressed compensatory forces, respiratory alkalosis and metabolic acidosis, low arterial pressure, and physiological incompleteness of the erythrocytes. Infusion-transfusion therapy should be carried out with great care, since under high-altitude conditions the excess introduction of fluids can induce pulmonary edema. Tables 1.

USSR

UDC 617-001.17.001.33

#### CLINICAL SUBSTANTIATION FOR THE SUBDIVISION OF DEEP THERMAL BURNS

Moscow KHIRURGIYA in Russian No 6, 1977 pp 49-52

VIKHRIYEV, B. S. and BURMISTROV, V. M., professors and BUGLAYEV, A. I. candidate of medical sciences, Clinic of Thermal Affections (Chief, Prof. B. S. Vikhriyev) Military Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] Burns with affection of deep anatomic structures differ from burns with necrosis of the derma and the subcutaneous-fat layer by a more severe course of the burn disease, more frequent appearance of infectious complications in the wound, as well as morphological and functional aberrations in the affected regions. Therefore the area of IV and IIIB-degree burns should be distinguished, and they should be registered by special formula. The existing classification of burns on the basis of depth of the tissue necrosis should be amended so that affection of the derma and of the subcutaneous-fat layer be attributed to IIIB degree

burns, while destruction of the skin, as well as that of subcutaneous cellular tissue, and tissues situated below the fascia, should be attributed to IV degree burns. Figures 1.

USSR

UDC 617-001.17-07:[616.151.5+6161-5512-008.1]-07

BLOOD COAGULATION AND THE FUNCTIONAL PROPERTIES OF PLATELETS IN ADVANCED STAGES OF BURN DISEASE

Moscow KHIRURGIYA in Russian No 6, 1977 pp 44-49

LEVIN, G. YA. and PAKHOMOV, S. P., Gor'kiy Scientific Research Institute of Traumatology and Orthopedics

[Abstract] In a study of the functional properties of blood platelets, as well as of their correlation with some parameters of blood coagulation in patients with advanced burn disease, it was ascertained that the septic-toxic period is characterized by a tendency for hypercoagulation, the most important signs of which consist in an enhancement of the dynamic properties of the platelets and inhibition of the plasmin activity of the blood. Patients, more than 20% of whose body surface is affected by deep burns, manifest a clear inhibition of platelet adhesiveness and aggregation. Any agent affecting the coagulatory system of a burned patient's blood should be applied with great care and subject to monitoring the dynamic properties of blood platelets, thromboelastograms, and the thrombosis formation time. References 8: 6 Russian, 2 Western.

USSR

UDC 616-089.5:615.015.25 "Bemegrid"

EXPERIMENT IN THE CLINICAL USE OF BEMEGRID

Leningrad VESTNIK KHIRURGII in Russian Vol 119, No 7, 1977 p 108

ORLOV, V. Ya., Anesthesiology and Reanimation Course, Ryazan Medical Institute imeni Academician I. P. Pavlov

[Abstract] A study of the effect of the use of bemegrid at the end of surgery under endotracheal anesthesia with artificial ventilation involved 22 persons undergoing general surgery. Data were collected after intravenous injection of 10 ml of 0.5 percent solution of bemegrid. Two persons displayed harmful aftereffects (one experienced breathing difficulty for 15 minutes after use of bemegrid and another experienced recurarization the elimination of which required intensive care). These observations prevented the recommendation of use of bemegrid in the period of restoration

of independent breathing in patients after surgery conducted under anesthesia with artificial ventilation of the lungs. References 4: 3 Russian, 1 Western.

USSR

UDC 616-001.4-02:616.001.17]-08:547.245

USE OF SILICO-ORGANIC FLUID PES-3 IN THERAPY OF WOUNDS IN THE BURN CLINIC

Leningrad VESTNIK KHIRURGII in Russian Vol 119, No 7, 1977, p 78

ARATSKY, V. P., DUNAIEV, V. G. and ZHDAKOV, I. D., Gorkiy Scientific Research Institute of Traumatology and Orthopedics

[Abstract] The use of silico-organic fluid PES-3 in combination with other generally accepted measures (dressing, antiseptic) on 80 burn patients during dressing of 44 granulated wounds and 78 wounds in donors after free skin autoplasty lessened the traumatism and painfulness of the dressings. It had no negative effect upon the granulated tissues and skin transplants and did not prolong the term of healing of wounds of donors. References 4: 3 Russian, 1 Western.

USSR

UDC 616-006.94-085.277.3:547.495.4

NITROSOMETHYLUREA IN THE COMBINATION CHEMOTHERAPY OF MALIGNANT TUMORS

Moscow SOVETSKAYA MEDITSINA in Russian No 8, 1977 pp 72-77 manuscript received 9 Mar 77

DEMENT'YEVA, N. P. and KORMAN, D. B., Institute of Chemical Physics, Academy of Sciences USSR

[Abstract] Administration of nitrosomethylurea combined with cyclophosphamide brought about objective improvement in 34 of 85 patients with advanced forms of lung cancer (squamous cell, adenocarcinoma, etc) with remissions lasting an average of 2.4 months. The addition of methotrexate had no perceptible effect. Of 55 patients with Hodgkin's disease, nitrosomethylurea combined with vinblastine, Natulan (1-methyl-2-benzylhydrazine), and prednisolone was highly effective in 53; 29 of the latter had a complete remission for more than 14 months. In 12 patients with disseminated melanoma, 4 of 6 treated with nitrosomethylurea, dactinomycin, and vincristine and 4 of 6 treated with these drugs plus imidazole-

carboxamide exhibited some improvement in the form of regression of metastases and remissions lasting 2.1 months on the average. The side effects of the combined drugs were the usual ones associated with each in nature, frequency of occurrence, and intensity. References 13: 11 Russian, 2 Western.

USSR

UDC 615.874.2:547.466].032.14.035

BROADENING THE INDICATIONS FOR THE USE OF HYDROLYSINE AND AMINOKROVINE

Moscow SOVETSKAYA MEDITSINA in Russian No 8, 1977 pp 13-16 manuscript received 18 Feb 76

CHAPLYGINA, Z. A., professor KHLEBNIKOVA, I. M., candidate of medical sciences, SHAHIN, S. S. and SHLIONSKIY, L. M., Leningrad Institute of Hematology and Blood Transfusion; Pediatric Hospital No 21

[Abstract] Purification of the Soviet-produced protein hydrolysates Hydrolysine and Aminokrovine (the former obtained by acid hydrolysis of cattle blood proteins with 2% glucose and the latter by acid hydrolysis of human blood) greatly increased their efficacy in the treatment of children of all ages suffering from peritonitis, intestinal obstruction, toxemic pneumonia, purulent and other diseases associated with severe disturbance of protein metabolism. Parenteral injection of the preparations significantly raised total blood protein levels, increased the albumin-globulin ratio, and lowered blood residual nitrogen and urea levels with corresponding improvement in the general condition of the children - cessation of vomiting, increase in diuresis, and lowering of body temperature. Side effects were uncommon and quickly relieved by suspending the preparation. Freeing Hydrolysine and Aminokrovine from ballast substances also permitted them to be administered enterally. Trials of the preparations in adults likewise yielded satisfactory results. References 12: 8 Russian, 4 Western.

## Veterinary Medicine

USSR

### ANNOUNCING LTF-130 VACCINE FOR RINGWORM

Moscow VETERINARIYA in Russian No 4, Apr 77 p 129

[Author not given]

[Abstract] The Privolzhsk Biopiant has developed a vaccine--LTF-130-- for prevention and treatment of bovine ringworm. The vaccine will keep for one year if stored in a dry dark place at 2-10°C. The preparation is harmless for healthy animals and is administered in doses of 5-10 m depending on age to calves 1-8 months old. The vaccine is given in two injections spaced 10-14 days, and immunity starts one month after the second injection. In treatment, a double dose is given in two injections spaced 10-14 days, the curative effect showing up within 15-30 days after the second injection.

USSR

UDC 619:616.986.7-084:636.4

### A CASE OF LEPTOSPIROSIS OF HOGS IN A COMPLEX

Moscow VETERINARIYA in Russian No 4, Apr 77 pp 58-59

DRAGOMIR, A. V., Council of Collective Farms of the Moldavian SSR

[Abstract] A report on leptospirosis of hogs in a complex with a capacity of 54,000 animals per year. Over a seven-month period, beginning in late 1974, 2835 sows and 100 boars were brought into the complex without holding in preventive quarantine. In April 1975 abortions began to be noted, 24 sows aborting in one month. The veterinary service of the complex did not take steps to determine the causes of the abortions, assuming that they were due to traumatic and alimentary factors, especially since there was a drop in abortions after April (14 in May and 11 in June). Then 27 pigs aborted in July. The results of laboratory studies of fetuses and blood samples were indicative of leptospirosis in a significant number of samples. These and other studies show the need for care in evaluating results of serological tests for leptospirosis on aborted sows. In August, steps were taken to eliminate the disease, including streptomycin treatment given together with antileptospirosis serum. On the second day after farrowing, the pigs were immunized, and once again 7 days later. The remaining sows and boars, and piglets over 26 days of age were doubly immunized. Despite increased sanitation measures, the abortions continued to November, reaching a total of 199 cases. There was also reduction of fertility over the period (50% instead of the normal 80%). Steps are recommended for preventing cases of this kind on large hog complexes in the future.

USSR

UDC 619:614.9:614.485+621.337.534.15:636

# USING COMBINATION FLUORESCENT LIGHT SOURCES IN LIVESTOCK BREEDING

Moscow VETERINARIYA in Russian No 4, Apr 77 pp 41-44

BAKSHEYEV, P. D., Khar'kov Zooveterinary Institute and SOZIN, D. S.,  
Saransk Special Light Source Plant

[Abstract] The article surveys the latest data on combined fluorescent light sources that cover the visible and biologically-active ultraviolet regions of the electromagnetic spectrum. The phosphor used in the lamps is chosen so that it emits not only in the visible spectrum but at wavelengths of 280-380 nm also. The phosphor is applied to the inner surface of a tube of Uviol glass. Results are given on the effect of LEO-30, DRVED-220-250, LER-40 and LE-30 lamps on poultry. A weight increase was observed for all except the LE-30, and there was no difference from the control in red blood cell content and hemoglobin, nor in the amount of hemoglobin per red blood cell. The lysozyme titer and the bactericidal action of the blood of the experimental animals were higher than in the control group. The maximum biological effectiveness is realized with combined action of ultraviolet and visible radiation. Enzymatic activity and production of antibodies are also enhanced by combined UV and visible radiation. Similar results were found in experiments with suckling pigs. Weight increase was especially pronounced. LEO-30 lamps are especially effective and convenient for use in livestock breeding and growing programs.

USSR

# EXPERIENCE IN PREVENTING ILLNESS IN CALVES

Moscow VETERINARIYA in Russian No 4, Apr 77 pp 21-24

FEDOTOV, I. I., Kirgiz Scientific Research Institute of Livestock Breeding and Veterinary Science, and LEVTSOV, V. N., Ministry of Agriculture of the Kirgiz SSR

[Abstract] A summary of a system developed by the Kirgiz Scientific Research Institute of Livestock Breeding and Veterinary Science for livestock growing that minimizes or prevents illness in calves at an early age. The basis of the system is a building organized around special calving rooms and dispensaries for calves. Standby facilities are provided so that rooms can be periodically changed and cleaned. A diagram of the building is given and the arrangements and equipment used in the new system are described in detail. Figure 1.

USSR

HEALTHY INCREASE FOR INDUSTRIAL FARMS

Moscow VETERINARIYA in Russian No 4, Apr 77 pp 18-20

KAREV, V. P. and KASYUK, V. I., All-Union Scientific Research Institute of Veterinary Sanitation, and ZAROZA, V. G., Moscow Agricultural Academy imeni K. A. Timiryazev

[Abstract] The paper summarizes measures that have been developed and introduced on large dairy farms to ensure healthy calves. Pregnant cows are kept in sections that are connected to the delivery rooms, and provisions are made for ultraviolet disinfection. The delivery section is designed for accommodating 12-15% of the herd and is equipped with sanitizing, ventilation, heating and disinfection facilities. Special cleaning stations are provided for disinfection 5-6 days before calving. The delivery section has special accommodations for cows in labor, calving and recovery. The arrangements and steps taken during and after the birth of calves to ensure sanitary conditions are described in detail. A diagram is given showing the dispensary and delivery section of a dairy farm for 800-1200 cows. Introduction of the proposed measures at the "Faustovo" Sovkhoz has reduced the morbidity of calves by a factor of 3, and the duration of illness has been reduced from an average of 5 to 2.4 days. In addition, stillbirths have been prevented as well as postpartum complications for the cows. Figure 1.



II. BEHAVIORAL SCIENCES  
Physiological Psychology

USSR

UDC 612.821.17.3-06:612.822.1.014.46.:547.757

EFFECTS OF SEROTONIN AND EPINEPHRINE BRAIN LEVELS ON THE TRAINING OF RATS  
SUBJECTED TO DIFFERENT EMOTIONAL REINFORCEMENTS

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 8,  
1977 pp 131-133 manuscript received 6 Jan 77

SEMENOVA, T. P. and VEKSHINA, N. L., Laboratory of Emotional Memory,  
Department of Memory Studies, Institute of Biological Physics, Academy of  
Sciences USSR, Pushchino-on-Oka, and the Laboratory of Neurohumoral  
Regulation, Institute of General Pathology and Pathophysiology, Academy of  
Medical Sciences USSR, Moscow

[Abstract] Studies were conducted on 143 male Wistar rats to determine the effects of intraperitoneal administration of 5-hydroxytryptophan (5-HT) (10 mg/kg/day; up to 1 h before testing) or D,L-DOPA (20 mg/kg/day; up to 1 h before testing) on the acquisition of pain-avoidance or food-seeking skills. 5-HT was observed to markedly facilitate food-seeking but negatively affected pain avoidance; further, 5-HT promoted a 1.5-2.5-fold increase in the brain levels of serotonin which was most pronounced in the neocortex in rats on food reinforcement and in the caudal brain stem of rats subject to pain reinforcement. Norepinephrine (NE) was unaltered in the brains of the former rats, but elevated in the neocortex of the latter group, D,L-DOPA greatly facilitated acquisition of pain-avoidance behavior and to a lesser extent food-seeking. Further, D,L-DOPA promoted a 1.5-1.9-fold increase in brain levels of NE (particularly in the caudal brain stem of rats on food reinforcement, and in the hypothalamus and neocortex of rats on pain reinforcement). Brain levels of serotonin tended to decrease, particularly so in the case of the neocortex. These findings appear to confirm the hypothesis that serotoninoergic mechanisms in the brain promote the acquisition of emotionally positive behavior, while the NE-ergic system promotes learning involving negative reinforcement. References 6: 5 Russian, 1 Western.

CSO: 1840

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